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Special Libraries

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L. A. CONVENTION
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Swampscott, Mass., June 20-25.

COMING?

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Annual Meeting

SWAMPSCOTT, MASS., JUNE 20-25, 1921

The following Associations, Sections and other groups are expected to meet during the week: Special Libraries Association, American Library Association, College and Reference Section, Trustees Section, Cataloging Section, Children's Librarians' Section, Professional Training Section, Agricultural Libraries Section, School Libraries Section, Lending Section, Librarians of Small Libraries Round Table, Training Class Instructors, Librarians of Religion and Theology, Public Documents Round Table, National Association of State Libraries, League of Library Commissions, American Association of Law Libraries, A. L. A. Council, Association of American Library Schools, and Library Workers' Association.

The attractions of Boston and vicinity will undoubtedly bring large numbers from all parts of the country in spite of the high cost of travelling, and the Program Committee is planning to allow ample time for excursions to points of historical and literary interest.

The following statements have been prepared by Mr. F. W. Faxon, chairman of the Travel Committee. His associate on the committee are C. H. Brown, of Washington, and John P. Phelan, of Chicago.

HOTEL ACCOMMODATIONS

The New Ocean House, one of the most up-to-date and exclusive hotels on the Atlantic Coast, will be headquarters. Here and in the fireproof assembly hall on the grounds, will be held the general sessions and all other meetings. This hotel, its annex facing the ocean, and the adjoining connected, seven-story concrete section, will accommodate approximately seven hundred people. Five cottages on the hotel grounds will house nearly one hundred more. All meals will be in the hotel dining room, American plan, for those having rooms in the hotel or its cottages. Only persons staying five days or more will be assigned to the New Ocean House. Those staying less than five days will apply for rooms in the other hotels or rooming houses.

Hotel Preston, directly on the ocean, in the exclusive residential section of the North Shore Summer Colony, one mile from the New Ocean House, accommodates two hundred and fifty, and a free bus service will be provided for those assigned there, giving quick transportation to and from the conference meetings. It is an up-to-date hotel, and will be chosen by those who wish the quiet rest outside headquarters.

Hotel Bellevue, fifteen minutes' walk from Headquarters, and on trolley line running every fifteen minutes directly to the assembly hall on the New Ocean House grounds (fare 10c or 15 rides for $1.00), accommodates about fifty. American plan.

The Willey House and Annex, near headquarters, and also on the trolley line, will provide for one hundred persons. American plan.

For those desiring to attend the meetings only, and not to stay overnight, a limited number of [illegible] rooms will be provided in the assembly house, as many as may be desired, and the New Ocean House cafeteria will serve a hundred at one time.

One-day Visitors

Transient delegates coming to Swampscott for the day only, and not to stay overnight, may also get meals at reasonable rates. A few can be accommodated in the dining room, where lunch will be served (regular rate $1.00) and dinner (special rate $1.00).

How to Make Reservations

Reservation of rooms should be made as soon as possible. Assignments will not be made after April 10th. If all cannot be given the accommodation requested, preference will be given other members and those who come from New England. For all hotel and rooming house reservations write to The American Library Association, care of New Ocean House, Swampscott, Mass., the permanent address which will acknowledge all letters. As stated by Mr. F. W. Faxon of the Travel Committee, will make all arrangements.

For rooms in private houses write to Mr. C. E. Sherman, Free Public Library, Lynn, Mass., who has undertaken to arrange that part of the program.

State in your application for rooms the kind of room wanted, and the days on the schedule above, also day of arrival, number of persons you [illegible] room with, or state if you wish a room assigned you. Remember that we cannot provide single rooms at hotels or boarding houses if you apply for room there for a five days' visit. Indicate your choice in case desired accommodations cannot be had. Headquarters will be open every day. Hotel Preston is on the ocean, offers greater quiet and more room for recreation.

The reduced rates made for the Conference at New Ocean House will be available for several days before and after the meeting if desired, and will hold for those who wish to remain after the meeting to see the sights. The meeting is open from noon of Friday, July 1st.

(Continued on page [illegible])

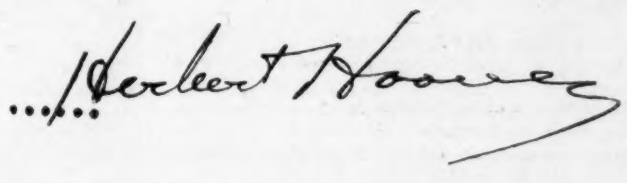
FACT INFORMATION IN BUSINESS

A Message to Special Librarians

In the organization and management of every business, statistical and fact information plays a most important part. Business executives must know the character and the location of the demand for the products made by their concern; they must know the sources for labor and raw materials; they must know credit and financial conditions, and a host of detailed facts about all current operations of the business. Fact information of all kinds must be salvaged from a wide variety of sources both inside and outside the organization. In proportion as this information is promptly received and accurately compiled the business will tend to prosper and the organization to function smoothly.

While the truth of the foregoing has always been recognized by successful business men, they have differed in the methods which they have employed to secure facts and statistics and to prepare such information for current use. In many cases there exists more or less adequate machinery for the initial collection of business data but the importance of organizing and preserving this material for future reference is not realized. Short-sighted policies in this respect have frequently resulted in financial loss to the company concerned.

The function of the business library, as I understand it, is to collect and to preserve data of value to the business executive and to so organize this information that it will be available for use with a minimum of delay. There can be no question of the value of such service to the larger business firms when the work is properly organized and the librarian in charge has a clear conception of the possibilities of his position. The statement that "knowledge is power" is as true for business as for the learned professions, and the business librarian who can make his service an integral part of his firm's organization may become a positive factor, both in the increase of profit and in the development of constructive business standards.



Special Libraries

ADELAIDE R. HASSE, Editor
Council of National Defense
Washington, D. C.

Vol. 12 April, 1921 No. 4

Off the President's Bat

The writer is Mr. Charles E. Carpenter, President of E. F. Houghton and Co., Philadelphia, makers of oils and leathers for the industries. The house was established in 1865. We reprint this article from the Company's house organ "The Houghton Line," for March, 1921. We are delighted to offer it to our readers and urge a careful consideration of Mr. Carpenter's reflections. Satisfying the customer is the best of salesmanship. Five hundred per cent profit is Mr. Carpenter's estimate of the salesmanship of his Library!

At the General Offices of E. F. Houghton & Company in Philadelphia we have what we call The Houghton Library.

Our Library may or may not be similar to other plant or industrial libraries. I cannot say, for I am not up on that subject.

Undoubtedly, however, its basic principle is like that of other efficient libraries, because our Library was installed by Miss M. Stella Helm, a professional Librarian (meaning that she is a graduate in a special course in library work), formerly associated with the Free Library of Philadelphia.

As I understand it, the courses that fit one for the profession of librarian teach mostly classification and cross indexing. These are the rudimentary branches of library work, for, when a person wants something out of a library, "he wants what he wants when he wants it," and a properly conducted library must be able to render up-to-the-minute service. Otherwise it is an expense instead of an economy.

Perhaps, if I go a little further into detail, I may aid you in establishing a similar library, or perhaps you may aid us in improving ours.

The Houghton Library could perhaps be more accurately described if its title was: "The Houghton Library and Information Bureau," for the major portion of the service it renders is in furnishing information.

Just for your information and enlightenment on the scope of usefulness of a library in a modern business establishment, I will give here some of the inquiries made of our Library. All were accurately and promptly answered:

—

"How long does it take to go by rail from Chicago to Marshalltown, Iowa, and how much are the railroad and Pullman fares? What big cities and towns are passed through and what is the railroad? Give me the time-table information on trains leaving Chicago for Marshalltown and for return to Chicago, so I can select a good train. What is the best hotel in Marshalltown?"

(Inquiry made by the President and replied to at once, for the Library has the "Hotel Red Book" and all the necessary railroad maps, guides and timetables on file.)

—

"What information have you on paper pulleys?"

(Inquiry made by Master Mechanic's Division of the Works Engineering Department. Reply made in ten minutes. Two catalogs and two clippings from technical journals furnished.)

—

"Have you, or do you contemplate procuring, 'The Life of John Marshall,' by Albert J. Beveridge?"

(Inquiry made by an employee of the Leather Department. Answer made immediately and as follows: "We haven't the work and do not contemplate getting it. It is in four volumes and is one of the most widely read works of biography recently published. It is so expensive and likely to be so little consulted by our employees that we do not feel warranted in purchasing it from our library appropriation. If you are unable to procure it from any other source, we can no doubt borrow the work for you.")

(The Houghton Library has an arrangement with the Free Library of Philadelphia to the effect that the Houghton Library can obtain, on the responsibility of E. F. Houghton & Company, the loan of any such books. In fact, the Houghton Library has always on hand a limited supply of fiction from the Free Library. This batch of fiction is at intervals changed for a new batch. The arrangement works to the mutual advantage of the Free Library and the Houghton Library.)

—

"We are about to compile an article on the tannage of heavy or mechanical leathers.

Kindly furnish us with all information and data the Library has that will aid us."

(Inquiry made by the Research Department. About twenty-four hours was required to gather together and transmit the large quantity of books and clippings, including the advertising literature of every tanner and leather goods manufacturer of prominence.)

—

"*We read and hear much of Mr. Charles E. Carpenter's speeches at various places and to various audiences. Have you any printed copies of these speeches, manuscripts or notes, on file?*"

(The inquiry came from an outside source and our Library's reply was: "We have not any of the original notes or manuscript of Mr. Carpenter's talks, for the reason that, though he always makes preparatory notes of his addresses, he seldom sticks to them on the platform. We keep files of press and other clippings of his most prominent addresses, however.")

—

"*The Blank Oil Company is resorting to very unbusiness-like methods and discourtesy in their competition with our Middle Western Sales Agencies. Please furnish me with all the literature, letters, clippings, etc., in our files issued by the Blank Oil Company, or from them, or about them or their products. We want material in order to launch an effective counter campaign.*"

(We had comparatively little on file, however, but the Library had our Publicity Department send out an "S. O. S." call to our Field Force for the information, and inside of thirty days the executive who made the inquiry had full and complete data.)

—

"*What is the viscosity of tallow at varying temperatures?*"

(Inquiry made by one of our salesmen in our Philadelphia Territory. Answer furnished immediately.)

—

"*One of my customers wants a copy of The LINE containing an article replying to a criticism appearing in the* CHICAGO DAILY NEWS *on the subject of 'Vaccination'. Can I get this Copy for him?*"

(Inquiry made by a member of our Chicago Sales Force. Reply furnished immediately was as follows: "Article appears in Volume XXII, No. 2 (October 1918), page 18, under the title, 'Almost Completely in Accord.' We haven't this back number to send you, but have in the Library a full set of bound volumes of The LINE and can loan you, in the regular way, Bound Volume XXII. You can loan this to your customer, but you will be held responsible for its return.")

—

"*If you haven't them on file, please procure for me a complete set of copies of all United States Patents on case-hardening materials or processes.*"

(Inquiry made by Research Department and reply was made in the form of a complete set of copies of patents to date.)

—

"*Rush information upon acid pumps, conveyors and tanks.*"

(Inquiry made by Works Engineering Department. Furnished in one hour. Nine pieces of matter submitted.)

—

"*What references are there in standard works to 'Petroleum Acids'?*"

(Inquiry made by our Laboratory Staff. Reply necessitated search of the indexes and pages of some thirty large volumes and the placing of a marker where each reference occurred.)

—

The bulk of requests are, of course, for the loan of books, etc., known to be on file in the Library.

The classification and filing of material pertaining to Income Tax, Excess Profits Tax, Employers' Liability Insurance, Federal Trade Commission, are duties particularly well performed by our Library and this material is in constant demand and quickly available.

The Library does a great work in employee's welfare and education. During the lunch hour and before and after office hours the Library is thronged with the younger members of the employed force, particularly the office girls, seeking the lighter literature and the educational literature kept on its shelves.

The work incident to the conduct of our Library is done by three individuals; only two, however, devoting their entire time to the Library work.

First in the trio is Miss M. Stella Heim, Head Librarian. Miss Heim installed the Library and is its executive and advisory head.

Inasmuch, however, as Miss Heim is also Private Secretary to the President, she devotes but a small portion of her time to the Library.

Next is the Assistant Librarian, Miss Eleanore Sullivan, also a trained Librarian from the Free Library. The third is a young woman assistant.

In addition, there is the Library Committee, of which Miss Heim is chairwoman and which is composed of the executives who have, or whose departments have, the most use for the Library.

The Library Committee meets at the call of the chair, for discussion of Library subjects and to act in an advisory capacity to the Librarian.

Like the country lad who comes to town to work and must be satisfied at first with a hall bed-room, our Library is yet so young that it has not separate quarters of its own. Separate quarters are coming to it, however. It now occupies the hall room leading from the Accounting to the Executive Offices.

I can imagine the "conservatives" among my readers criticizing the Library idea on the grounds of the expense involved and classing it as an extravagance. I can imagine other readers being confused and befuddled with the thought that the Library requires a lot of system and red tape.

Let me inform both that our Library is a demonstrated economy and that it is simplicity itself (far simpler and less complicated than the usual method of obtaining the information it furnishes).

Many concerns suffer loss from the ignorance of their employees and the employees are ignorant because there is no ready method by which they can become informed.

Many concerns suffer loss because their employees are vicious through reading improper literature.

The plant library reduces those losses.

Calculating the saving in the time of high salaried executives at amounts ranging from $2 to $10 per hour, in hunting up this information, our Library pays a profit of about 500 per cent. In other words, it would cost our Company five times more to have its high salaried executives look up the information themselves and through outside channels.

In saving time the Library fully pays for itself.

In lessening the amount of misinformation, the Library pays for itself many times over.

In enabling the Purchasing Department to invite competition, by furnishing the Purchasing Department with information as to the sources of supply for all products requisitioned, the Library pays for itself many times over.

In reading the technical publications that have relation to our business and in calling the attention of executives and department heads thereto, the Library saves much in high salaried executives' time, and besides furnishes far more information of value than the executives could otherwise obtain.

In furnishing the executives with information on the rulings of Government departments, decisions of the courts, successes or failures of competitors, new competitive products, new processes of manufacture, new raw materials, new sources for supplies, the Library does a work whose value is incalculable.

The person who criticizes the Houghton Library as a useless extravagance is merely ignorant of good business principles. The Houghton Library is simply a well systematized method of doing things that must be done for the success of the business, and doing them at the lowest possible cost.

The reader should not imagine that the Houghton Library vies with any of the public libraries in magnitude or effort. It has its own special field and does not stray beyond, nor desire to.

Its nucleus consisted of the books (mostly technical), that were scattered here, there and everywhere around our plant and in the possession of individuals, though Company property. Their scattered condition made them difficult to consult when occasion arose and besides that, the existence of some of them and their presence in the plant was unknown to many who might have used them to advantage. In a number of instances, the books were kept at the homes of executives and employees.

With these books assembled in our infant Library, the Librarian was able to ascertain what books and other literature was required for an adequate plant library for E. F. Houghton & Company. This data was compiled by consulting lists of the literature published on the subjects involved, securing suggestions and information from executives and employees and discussing this information in committee meeting.

A moderate appropriation for book purchase was made by the Board of Directors. This appropriation has been included in each annual budget of the Company and it has never been exceeded.

In purchasing books preference is given to technical publications pertaining to oils, greases and leathers and the practical use of the same. In this respect, we are in a position to know that our Library is the best equipped in the world.

The technical part of our Library not only enables us to substantiate our knowledge of our own business, but it enables us to learn all the other fellows know, if we so desire It enables a new and inexperienced man coming into our Organization to make rapid strides in mastering the technology of our business.

A number of our executives and employees have turned over to our Library many books from their private libraries, for the reason that they desire these books where they may readily consult them in the course of their daily work and that others in the Organization may have the same advantage.

LINE readers often express a desire to do something to show their appreciation of having been sent The LINE regularly, even though there is not the least obligation on their part.

They can show appreciation, if they feel so inclined, by aiding the Houghton Library. This is in the very simple manner of sending books of any sort which may be suitable.

If you are, for instance, in the habit of purchasing novels with which to relax on the train, send them to us when you have finished with them. We have a bully good bunch of employees who require this sort of relaxation.

If you issue catalogs or literature pertaining to anything likely to interest us, send them in to our Library.

In sending your literature to our Library, you can be assured that it will be referred, not to the Purchasing Agent, but to the practical man whose judgment prompts the requi-

sitioning of the Purchasing Department for such goods.

After he has seen it, the literature will be duly filed for reference when the Company feels the need of such material. When, in a couple of years we think your literature has become out of date, we will send for new copies before destroying the old.

You may send us the literature of our competitors. This is very valuable to us, for we make a practice, in our own literature, o exposing the fallacies in the literature of competitors.

This, in turn, works benefit to the users of our products by furnishing them with the fullest information and the maximum amount of truth, for the whole truth can only be obtained by debate.

Every book, catalog or pamphlet, or even letter, you may send us will be appreciated.

I invite, of course, the fullest criticism of our Library.—(Reprinted from *The Houghton Line*, March, 1921.)

Agricultural Books of 1920

COMPILED BY WILLIAM MURRAY HEPBURN,

Librarian, Purdue University Library, Lafayette, Indiana.

Agriculture (General)

Bailey, L. H. School book of farming; a text for the elementary schools, homes and clubs. (Rural text-book series.) Macmillan. $1.20. 388p. 8p. index. (20-6216.)

Intended to develop a point of view on farming and country life in the minds of the young, to explain relationships of the parts and to state the main reasons underlying the growing of the leading crops and the raising of farm animals. Each topic is followed by review questions, thought questions and inquiries and special problems.

Findlay, Hugh, ed. Handbook for practical farmers. Appleton. $5.00. 558p. 6p. index. 258 il. (20-16999.)

Single volumes of this nature are not often successful, but this has many merits and is suited to the needs of the farmer, the small public library, the agricultural high school and the general reader.

Biography

Rus, a register of rural leadership in the United States and Canada. Compiled and published by L. H. Bailey, Ithaca, N. Y. $3.00. 2d issue. 533p. (18-23269.)

Wentworth, E. N. A biographical catalog of the portrait gallery of the Saddle and Sirloin Club, Chicago Union Stock Yards. 343 p. ports. (21-1507.)

127 biographical sketches of English and American breeders and others connected with the live stock industry and 20 sketches of famous animals.

Beekeeping

Pellett, F. C. American honey plants. American Bee Journal. $2.50. 297p. 9p. index. 155 il. (20-2730.)

A dictionary of plants of value for their nectar and pollen. Lists honey sources of each state and Canada. Brings together much information of value to the bee keeper.

Hawkins, K. Beekeeping in the South, a handbook on seasons, methods and honey flora of the fifteen southern states. American Bee Journal. $1.25. 121p. 1p. index. 29 il. (20-22985.)

Not intended as a manual for the beginner but to supplement standard textbooks so as to show what differences exist in bee keeping methods in the North and South.

Botany

Harshberger, J. W. Text book of pastoral and agricultural botany for the study of the injurious and useful plants of country and farm. Blakiston. 294p. 22p. gloss. and index. 121 il. (20-17509.)

Based on course of lectures given to veterinary students. Nearly half of book devoted to poisonous plants. Bibliographies at end of chapters.

Saunders, C. F. Useful wild plants of the United States and Canada. McBride. $3.00. 275p. Regional index 9p. Alpha. index 7p. Many il. (20-26546.)

Treats of plants available as sources of human meat and drink.

Butter

Hunziker, O. F. The butter industry, prepared for the use of creameries, dairy students and pure food departments. The author, LaGrange, Ill. $5.75. 672p. 6p. index. il. (20-8063.)

Comprehensive account of butter including production on the farm, treatment in creamery, marketing, storage, defects, standards and tests.

Chemistry

Newman, L. F. & Neville, H. A. D. A course in practical chemistry for agricultural students. Vol. 1. Macmillan. $3.25. (London, Cambridge Univ. Press. 10/6.) 235 p. No index. (Agr. 20-1303.)

Numbered blank pages at end of sections for notes. Covers one year's course on chemistry and Physics of the soil. Vol. 2 is to deal with the Chemistry of Foods.

Concrete

Campbell, H. C., How to use cement for concrete construction for town and farm, including formulas, drawings and specific instruction to enable the reader to construct farm and town equipment. Stanton & Van

Vliet. $2.00. 380p. 4p. index. Many il. (20-6499.)

Author is connected with the Portland Cement Association. A very practical book.

Dairying

Roberts, M. H. Feeding and management of dairy cattle for official production. Longmans. $3.75. 294p. 5p. index. 77 il., charts, report forms, etc. (20-6215.)

"First hand information, the result of practical experience gathered on one of the most successful and best equipped dairy farms of this country." Author is manager of Brookwood Farms, Barryville, N. Y.

Farm Animals

Tormey, J. L. & Lawry, R. C. Animal husbandry. American Book Co. $1.40. 351p. 13p. index. Many il. (20-6658.)

An elementary book intended for classes in vocational agriculture.

Wood, T. B. & Marshall, F. H. A. Physiology of farm animals. Part 1, General. Macmillan. $5.00. (London, Cambridge Press.) 204p. 5p. index. 105 il. (Agr. 20-1107.)

A text book for students. Vol. 2 is to treat of animal nutrition.

Foods

Pearl, R. The nation's food; a statistical study of a physiological and social problem. Saunders. $3.50. 274p. 6p. index. 77 tab., 42 diag. (20-4023.)

Based on data collected by U. S. Food Administration, Author being Chief of Statistical Division.

Rew, R. H. Food supplies in peace and war. Longmans. $2.25. (English price 6/6.) 183p. 3p. index. (20-4724.)

Gives statistics of British food supplies and examines problem of food supplies of Britain and the world.

Shanahan, E. W. Animal foodstuffs; their production and consumption with special reference to the British Empire: a study in economic geography and agricultural economics). Dutton. $5.00. (London, Routledge, 10/6.) 331p. 4p. index. (20-7575.)

A study of the economic position of animal industries in agriculture. Conclusion is that the supplies of animal foodstuffs tend to be deficient.

Forestry

Ise, John. The United States forest policy. Yale Press. $5.00. 395p. 9p. index. 8p. biblio. (20-8898.)

American forest policy, conservation and legislation treated historically. Considers the reasons for hostility to progressive forest policies and relation of lumber interests to the problem.

Woolsey, T. S. Studies in French forestry. Wiley. $6.00. 550p. 14p. index. 21 il. (21-667.)

Comprehensive book on forestry as practised in France. General account of French forestry methods. Has a chapter on the American Forest Engineers in France during the war. 22 p. bibliography of French forest literature, 1870-1912.

Fruit Culture

Sears, F. C. Productive small fruit culture: a discussion of the growing, harvesting and marketing of strawberries, raspberries, blackberries, currants, gooseberries and grapes. Lippincott. $2.50. 368p. 6p. index. Many il. (20-8064.)

Intended both for students and for the practical grower.

Popenoe, W. Manual of tropical and sub-tropical fruits, excluding the banana, coconut, pineapple, citrus fruits, olive and fig. Macmillan. $5.00. 474p. 16p. index. 24 pl. (20-15789.)

Treats of nearly one hundred species and varities of tropical fruits. Of interest to growers in sub-tropical regions of the United States.

Geology

Emerson, F. V. Agricultural geology. Wiley. $3.00. 319p. 15p. index. 270 il. (20-13575.)

The processes and principles of geology with special reference to soils and fertilizers. Numerous bibliographical references throughout text and at end of chapters.

Granger Movement

Buck, S. J. The Agrarian crusade, a chronicle of the farmer in politics. Yale Press.

Vol. 45 of "The Chronicles of America". Treats of the Granger movement, the Greenback and Populist parties and the battle for free silver.

Irrigation

Thomas, George. Development of institutions under irrigation with special reference to early Utah conditions. (Rural Science Series.) Macmillan. $2.75. 293p. 7p. index. (20-18321.)

Author is professor of Economics at University of Utah. Treats of water legislation, county and city control of water, irrigation districts, court decisions, Cary Act, Reclamation Service, recent legislation, etc.

Land Settlement

Mead, Elwood. Helping men own farms; a practical discussion of government aid in land settlement. Macmillan. $2.25. 288p. No index. 11 il. (20-10715.)

Contrasts methods in Australia and California. Gives an account of the Durham colony in California and the California Land Settlement Act.

Landscape Gardening

Simonds, O. C. Landscape gardening. (Rural Science Series.) Macmillan. $6.00. 338p. 6p. index. il. (20-21341.)

Discusses the aims and principles of landscape gardening, and then takes up the treatment of the various types of ground, such as home grounds, farms, grounds of railway stations, parks, school grounds, etc.

Meteorology

Smith, J. W. Agricultural meteorology; the effect of weather on crops. (Rural text-book series.) Macmillan. $2.40. 304p. 12p. index. 96 il. (21-669.)

Of value to college students and to all interested in farming. Author is connected with the U. S. Weather Bureau but was formerly a professor at Ohio State University. References at end of chapters.

Milk

King, C. L. The price of milk. Winston. $2.00. 336p. 4p. index. 19 maps and charts. (20-19945.)

The price of milk to the producer, 7 chap.; The cost of distributing milk, 5 chap.; Fair price policies, 3 chap. Author has had wide experience as Federal Milk Commissioner and is a professor in Wharton School of Commerce and Finance, University of Pennsylvania.

Plant Diseases

Smith, E. F. An introduction to bacterial diseases of plants. Saunders. $10.00. 688p. 26p. index. 453 il. (20-20204.)

Intended as a text-book. Major portion of volume deals with specific diseases. Also a chapter on "Methods of research" and much advice on various aspects of a scientist's work. Bibliographies in text.

Taubenhaus, J. J. Diseases of greenhouse crops and their control. Dutton. $8.00. 429p. 13p. index. 82 il. (20-13540.)

Includes chapters on Soils; Light, moisture and rest requirements; diseases of vegetables; diseases of ornamentals; greenhouse pests and methods of control.

Plowing

The Oliver plow book; a treatise on plows and plowing. Oliver Chilled Plow Works, South Bend, Ind. $1.00. 200p. (20-5832.)

Treats of soils and their handling; plowing to kill weeds and insects; judging plowing; forms of plowing; sharpening and care, etc.

Poultry

Lamon, H. M. & Kinghorne, J. W. Practical poultry production. Webb Pub. Co. 365p. 13p. index. Many il. (20-11311.)

Intended as a practical book for students and poultry keepers. Both authors are connected with the U. S. Dept. of Agriculture.

Lamon, H. M. & Slocum, R. R. The mating and breeding of poultry. Orange Judd. $2.50. 341p. 17p. index. 96 il. (20-26564.)

Shows how beginners or breeders may secure high class exhibition stock or stock of high egg laying capacity.

Patten, B. M. Early embryology of the chick. Blakiston. $2.25. 167p. 7p. index. 182 il. 6p. biblio. (20-19517.)

For students of embryology.

Prices

Wallace, H. A. Agricultural prices. Wallace Pub. Co., Des Moines, Iowa. $2.00. 224p. 3p. index. (20-6762.)

A study "from the farmer's viewpoint" of prices of agricultural products, cost of production, etc. Appendix contains 100 pages of tables for illustration and study, taken largely from governmental sources.

Rabbits

Washburn, F. L. The rabbit book; a practical manual on the care of Belgian hares, Flemish giants and other meat and fur producing rabbits. Lippincott. $2.00. 200p. 4p. index. 83 il. (21-668.)

A sane book by one who has been interested in the subject for many years. Author is a professor at University of Minnesota.

Rural Sociology

Phelan, John. Readings in rural sociology. Macmillan. $4.00. 632p. 8p. index. (20-17253).

Collection of readings to accompany use of text in introductory course. Selections are from modern writers and refer to conditions in the United States. Bibliographies at end of chapters.

Sims, N. L., ed. The rural community, ancient and modern. Scribner. $4.50. 916p. No index. tab. charts. (20-12477.)

Simliar in purpose to the Phelan but contains more material. Selections are fewer in number but longer. No bibliographies. Bulk of volume on modern American conditions.

A general book on soils, setting forth the fundamental principles without attempting to treat of the soils of any special region. Questions and problems are given at the end of each chapter.

Swine

Smith, W. W. Pork-production. (Rural Science Series.) Macmillan. $3.00. 492p. 10p. index. 12 pl. (20-12385.)

Feeding and management of swine at different seasons and their fattening, marketing, judging and breeding. Contains a chapter on "The preventions of hog diseases," by Dr. R. A. Craig. Both authors are connected with Purdue University.

Tractors

Collins, A. F. Farm and garden tractors, how to buy, run, repair and take care of them. Stokes. $2.25. 279p. 7p. index. Many il. (20-19612.)

The first part of the book is devoted to a description of the mechanism of the tractor. It then discusses garden tractors, tractors for small farms, for average farms and for large farms, with chapters on the care of the tractor, repairs, and the choice of a tractor.

U. S. Department of Agriculture

Wanless, W. L. The U. S. Department of Agriculture, a study in administration. (Johns Hopkins Studies in historical and political science, vol. 38, no. 1.) $1.25. 131p. (20-11021.)

Treats of federal agricultural legislation, present organization of the Department, administration of regulatory laws, financial administration, etc.

Veterinary Science

Hadley, F. B. Principles of veterinary science; a text-book for use in agricultural schools. Saunders. $2.75. 420p. 24p. index. 100 il. (20-3904.)

Places emphasis on anatomy and physiology. A development and rewriting of the author's "The horse in

health and disease." Author is professor in University of Wisconsin.

Weeds

Brenchley, W. E. Weeds of farm lands. Longmans. $4.50. (English price 12/6.) 239p. 13p. index. 41 il.

Author is botanist of the Rothamsted Experiment Station, England. Treats of distribution, prevention and eradication, habits, uses, vitality of weeds and their association with particular soils and crops. An English edition has been published.

Business Information Services

Suplementing list published in SPECIAL LIBRARIES, June, 1920.

BY THE BUSINESS BRANCH, NEWARK FREE LIBRARY,

Better Selling Bulletins, published irregularly by S. R. Hall, First National Bank Building, Easton, Pa. Cover points in retail selling, illustrated. $24 for 65 bulletins.

Candy's Service Club, Modern Confectionery Publishing Co., 5 North La Salle St., Chicago, Ill. "Your subscription to Candy, just received, entitles you to free and unlimited use of Candy's organization to answer, if possible, any and all questions pertaining to your business." Subscription price, $3.

Federal Trade Information Service, published by Pubilicity Corporation, Washington, D. C. Daily reports on decisions, rulings, orders and all other information germane to business emanating from government departments, bureaus and boards. Special service consisting of copies of bill, action on bills wired at once, publications of various departments, etc., $1.00 a year.

Forbes Investors' Service, of Forbes Magazine, 299 Broadway, N. Y. Opinions on specific stocks, statements showing how to invest any sum, with selection and description of stocks or bonds considered most suitable. Price varies from $3 to $8 per inquiry.

Freight Rate Guide; published in looseleaf form by W. J. Hartman, 732 Federal St., Chicago. A reproduction of the railroad rates as published by the carriers, with a monthly distribution of revised pages covering rate changes as they are made. $24 a year.

Information Bureau Service of the Chemical Catalog Co., 1 Madison Ave., N. Y. Gives information as to the names and addresses of manufacturers and sources of supply for chemicals, raw materials, chemical equipment and laboratory apparatus and supplies. Includes special reports, in reference to the uses of chemicals and raw materials, present and past prices, together with statistics relating to domestic production, imports and exports. $25 a year.

Insurance Reporting Service, rendered by A. M. Best Co., Inc., 75 Fulton St., N. Y. Annual reports, monthly periodicals, special bulletins, special reports as called for on all classes of insurance institutions operating in the United States and Canada; insurance engineering, fire protection and other technical advice. Price on request.

Investment Service, published by N. Y. Bureau of Business Research, 1416 Broadway, N. Y. Consists of daily postals giving summary of current price movements, weekly investments and business review, weekly stock chart, weekly stock tables, monthly supplement. $25 per quarter.

Investor Information Service, conducted by The United States Investor, a financial weekly, 530 Atlantic Ave., Boston, Mass. Furnishes information upon financial securities of all kinds. Subscription price $5.

Legislative Service, published by the Law Reporting Co., 17 E. 36th St., N. Y. Consists of index cards for bills of all legislatures in session during the year, giving numbers, titles, names of introducers, committee references and subject classification, copies of such bills in filing covers, reports of action on all such bills and copies of enacted laws. Cost depends on number and character of the subjects and the states to be covered.

List of stockholders and investors, prepared by Stockholder's Service Corporation, 44 Broad St., N. Y. Domestic and foreign corporations included, lists of trustees. Special investigations of corporations.

Magazine of Wall Street's Investment and Business Service; published weekly (Thursdays) by Magazine of Wall Street, 42 Broadway, N. Y. Makes direct, specific, definite recommendations as to what securities to buy, hold, exchange for others or sell. Also forecasts the trend of business, money, credit, banking, foreign trade and commodity prices. Additional special letters sent when sudden changes occur. $100 a year.

Merchants Trade Journal Service, 725 Grand Ave., Des Moines, Iowa. Contains advertising copy, sales plans, card wordings, etc., for dry goods, department, clothiers, furniture, hardware and general stores. Monthly $39 a year.

Monthly Forecast of Business, Financial and Security Market Conditions and Prospects; published regularly each month by Thomas Gibson, 29 Broadway, N. Y. Single issue, $1; annual subscription, $10.

My Letter; published by W. B. Cass, 55 Broadway, N. Y. Weekly letter on world trade conditions, industrial developments, legislation, court decisions, railroad and shipping problems and essential commodity

information. Occasional special letters. Upon special request available current or back information which can be promptly had here, in Washington or abroad. $15 a year.

National Bureau of Public Information; 408 Pope Building, Washington, D. C. Service consists of (1) the daily legislative supplement card service, (2) the weekly printed pamphlet giving status of pending legislation, (3) the monthly printed documents of Congressional transactions, averaging about 240 pages. Card Index Service $150 per session. Weekly Compendium, $11.50 per year. Monthly Compendium, $11.50 per year. Weekly and Monthly Compendium, $22.50 per year.

National Property Owner; 220 W. 42d St., N. Y. Give to their subscribers advice and information relative to financing, designing, building, furnishing, landscaping and maintenance of the home, collective building, industrial housing, etc. Subscription price, $2.50.

National Services for Business Men; Merchants Trade Journal, Inc., 949 Broadway, N. Y. Offer to subscribers use of the office, stenographers, telephones, directories, etc., when in New York. Look up lines, have samples sent on approval, etc. Subscription price, $3.

Financial and Economic Service, New York Bureau of Business Research; 57 Wall St., N. Y. Consists of daily postals for stock traders; weekly stock chart for stock traders; weekly investment and business review for investors, stock traders and business executives; statistical analyses of stocks by groups for stock traders, issued irregularly; weekly stock tables for stock traders; monthly forecast of bond and stock prices and monthly supplement for investors, stock traders, and business executives; what stocks to buy and sell, for investors and stock traders.

Personal Advice Service of the Financial World; 29 Broadway, N. Y. Privilege of consulting by letter during the period of subscription for information and advice on securities. Subscription price, $10.

Personal Information supplied by Underwriters' and Credit Bureau, Inc.; 21 Platt St., N. Y. A clipping service which makes searches for individual names, a transcript of a brief clipping found is returned. Character of longer clippings reported with cost of transcribing. $1 a search.

Poor's Daily Digest Service; published by Poor's Publishing Co., 33 Broadway, N. Y. Consists of daily sheet presenting a digest of corporate and financial news, this is cumulated twice a month; new security offerings weekly; bond interest defaults biweekly; daily dividend sheet; rights, meetings, etc.; weekly dividend sheet on less active securities; monthly sheet on inactive securities; called bonds and proposals, weekly. $120 a year.

Poor's Investment Service; published by Poor's Publishing Co., 30 Broadway, N. Y. Weekly investment letter, special investment letter, investment outlook on first of each month, and service of advisory department. $120 a year.

Research Service Department of Rock Products; 542 South Dearborn Street, Chicago, Ill. Supplies catalogs, information and prices on machinery, equipment and supplies in rock products industries. Subscription price, $2.

Richard D. Wyckoff Analytical Staff; 42 Broadway, N. Y. Investment service which gives advice as to investments of individuals. $1,000 a year.

Richey Data Service; published monthly by Richey Data Service, Meridian Life Building, Indianapolis, Ind. Consists of maps, charts and information covering advertising and sales subjects, in loose-leaf form. $15 a year.

Semi-Monthly Report Service; compiled by United States Corporation Co., 65 Cedar St., N. Y. The service covers state reports and state taxes due from business corporations and gives six weeks' notice of time to secure report blanks, four weeks' notice of report and tax dates and a two weeks' warning. $50 a year.

Service Sheets; published by Architectural Service Corporation, 139 North Sixth St., Philadelphia, Pa. A loose-leaf cumulative library of details, specifications and data showing the use of modern building materials and specialties. Price on request.

Statistical Service; published by the Harvard University Committee on Economic Research, Cambridge, Mass. Consists of biweekly advance letters on general business conditions, a monthly review of economic statistics and occasional supplements. $100 a year.

Stockholders' Lists; published by William Jones, Auditors, Inc., 116 Broad St., N. Y. Supplying names of stockholders in corporations at 1 cent a name.

Traffic Law Service, on Federal Regulations of Interstate Commerce and Common Carriers; published by Traffic Law Service Corporation, S. W. corner La Salle and Adams Sts., Chicago, Ill. Consisting of (1) a loose-leaf work comprising approximately 3,000 pages of transportation law, (2) service of keeping the loose-leaf current by amendatory and supplementary pages, (3) consultation services covering scope of the work. $150 a year.

Trow Alcom Information Service; supplied weekly by R. L. Polk & Co., 135 Church St., N. Y. Consists of multigraphed slips showing name and address of new firms and removals in N. Y. and kind of business. $360 a year.

Catalogue Studies; compiled annually by Whipple's Technical Libraries, Allston Square, Boston, Mass. A Service of Tech-

nical information used for instruction in Engineering Schools, covering Mechanical, Electrical, Chemical, Mining and Agricultural Engineering. Supplies latest Catalogues, Blue Prints, Hand Books and literature suitable to bring Text Books up to date. A co-operative service among Technical Manufacturers. Thoroughly Indexed.

Shippers' Guide; 13-21 Park Row, New York City. Service consists of freight, express and postal information. Loose-leaf form, with monthly supplements. $16 per year.

Standard Service on Railroads. Published by Standard Statistics Company, Inc., 47 West Street, New York City. Will supply approximate property value and figures, normal seasonal variation of traffic, probable annual income, annual rate of fixed charges, equity in own earnings, amounts available for fixed charges.

Monthly summary, covering all developments in the railway field from the standpoint of the investor. $6 per month.

True Library Stories

The character of service rendered by Goodwyn Institute Library, Memphis, Tenn., Miss Marilla W. Freeman, Librarian, may best be understood through a few typical incidents of the day's work:

A large cotton oil concern desires certain special data on the chemical composition of cotton seed, for the purpose of formulating more efficient methods in the manufacture of its commercial products. The library furnishes the company with government bulletins on cotton seed histology; secures from a University of Chicago botanist the titles of two German books on microchemistry containing the desired data; learns from a New York dealer that the books cannot be imported from Germany without several months' delay; and finally borrows the books from a special technical library in Chicago for the use of the cotton oil company's expert chemist.

The "land-poor" owner of a tract of land in Carroll County, thought to have little worth, learns through the visit of some strangers that he has a clay bed of unusual value for the manufacture of fine china. He receives an inadequate offer for it. At Goodwyn Institute Library he is given a copy of "The Resources of Tennessee" for April, 1919 (published by the State Geological Survey) containing under "Ball Clays of West Tennessee" an exact analysis of his clay, made at the ceramic laboratories of the University of Illinois. He communicates with the State Geologist and the expert Illinois ceramist, secures a just estimate of the market value of his land, and sells it at eight times the price first offered him.

On the eve of a threatened strike, in one of the largest public utility companies of Memphis, representatives of both employees and corporation call upon Goodwyn Institute Library for information which may avert the catastrophe. Data on wages, prices, costs of living, and hours of labor in Memphis and other cities for the last 12 months are furnished both sides separately, chiefly from the Monthly Review of the U. S. Bureau of Labor Statistics. Through the Industrial Arts Index and other sources, facts are secured as to the terms of settlement of recent similar strikes in other cities. As a result concessions are made on both sides, and the strike is averted.

A middle Western farmer, desiring to settle in the South, calls at Goodwyn Institute Library to inquire into Memphis educational advantages for his family, and into farm soils and opportunities for purchase adjacent to Memphis. Information is given him about the public and private schools of the city, also a copy of the Shelby County Soil Survey of the U. S. Bureau of Soils, and other printed data relating to Memphis and Shelby County, including the publications of the Chamber of Commerce. An introduction from the librarian to the director of the Memphis Farm Development Bureau leads to his meeting with some of the loyal and thoroughly informed Memphians who sponsor that organization, and finally to the purchase of the desired farm, and the settlement of the farmer and his family as desirable citizens of the Memphis territory.

A Business Men's Branch of the Boston Public Library

The establishment of a Business Men's Branch of the Boston Public Library in the business district of the city has been recommended to the library trustees and the Mayor by F. Nathaniel Perkins, William Leahy and E. Sohier Welch, members of a sub-committee of the examining board of the library. As an appropriate location for the proposed branch, the new Chamber building, to be erected at the corner of Franklin, Federal and Congress streets, has been suggested.

The merits of this project are obvious. That such a branch would be patronized heavily is beyond doubt. The time required to go from the business district to the main library in Copley Square many times is more valuable to the busy merchant, executive or banker than the information which he desires.

Though new to Boston the idea has been tried out in other cities and proven valuable. The Mayor and the trustees should give careful consideration to the proposed branch.—(Reprinted from Current Affairs, April 18, 1921.)

Reading List on Lime

Compiled by Clarence Jay West.

Introduction.

Lime, calcium oxide or Cao, is the product obtained by burning the naturally occurring limestone, which is calcium carbonate or $CaCO_3$ (more or less pure). The kilns consist essentially of shafts lined with fire brick. The limestone is fed in at the top and the lime drawn out at the bottom. During the passage through the kiln, enough heat is supplied to decompose the calcium carbonate, splitting off carbon dioxide and yielding lime. Since pure calcium carbonate decomposes at 898° C. (1648° F.) and at higher temperatures (about 1200° C. or 2192° F.) the impurities in the limestone react with the calcium oxide, the temperature at which the lime is burned may vary from about 900 to 1200° C. The lower the temperature at which the lime is burned, the better will be its quality.

Classification.

The wide variation in the chemical and physical properties of limestones (analyses of hundred of limestones are given in Min-Mineral Resources, 1919, II, 657-707) necessitates a similarly great difference in the kinds of lime. The classification adopted by the American Society of Testing Materials (A. S. T. M., Standards, 1918) is as follows:

1. High calcium—Not less than 90% calcium oxide.
2. Calcium—Not less than 85% nor more than 90% calcium oxide.
3. Magnesian—Not less than 10% nor more than 25% of magnesium oxide.
4. High magnesian—Not less than 25% magnesium oxide.

Properties.

Lime, chemically, is calcium oxide, but commercial limes may contain anywhere from 0 to 44% of magnesium oxide in addition to small amounts of other impurities, such as iron and aluminium oxides. The lime will generally retain the same form as the limestone, but the porosity is increased very greatly. Lime is nearly white, but it may have a gray, pink or yellow tinge, depending on the impurities present.

When lime is slaked, the calcium oxide combines with water to form calcium hydroxide ($Ca(OH)_2$). The reaction generates heat and is accompanied by an increase in volume. The magnesium oxide, which may be present, hydrates much more slowly than the calcium oxide. The rate of slaking will, therefore, depend in part on the composition of the lime. Porosity also plays an important part, because the more porous the lime, the more quickly can the water penetrate it.

Exposed to the air, lime absorbs carbon dioxide and water. Completely air-slaked lime is practically identical with ground limestone, and therefore has no value, as lime, for building or chemical purposes.

Hydrated Lime.

Lime that has been slaked is an article of commerce under the name of hydrated lime. It is prepared by adding to quicklime just sufficient water to insure complete slaking and under such conditions that the heat generated will evaporate all the excess water and leave the product dry.

Hydrated lime is a fine, dry powder, consisting essentially of calcium hydrate and magnesium oxide. In building operations it may be used for any purpose in place of lump lime with precisely similar results. The consumer pays the freight on a large amount of water, but the time and labor of slaking the lime is eliminated and a uniform product is always at hand.

Testing Lime.

From a consideration of the general purposes for which lime is to be used, it is believed that the testing of lime for purchase should include the following determinations.

Carbon dioxide—To measure general conditions as affected by burning and air-slaking. Quicklimes of good quality should not contain over 1% carbon dioxide.

Rate of hydration—Lime which has been burned properly will slake more rapidly than that which is underburned or overburned.

Uses of Lime.

The following is a list of the uses of lime. To describe each one would extend this introduction to too great a length. The reader is referred to Bureau of Standards, Circular No. 30, and to the various reports in Mineral Resources:

I. Building Lime.
   - Cement.
   - Concrete.
   - Mortar.
   - Plaster.
   - Stucco.

II. Sand Lime Brick.

III. Agricultural Lime.
   - Direct use on Soil.
   - Fertilizer, Prepared
   - Insecticides and Fungicides.
   - Protection of Bacteria.
   - Spraying material (Lime Sulphur solutions of various kinds).

IV. Lime for Chemical Industries.
   - Bleaching industry.
     - Manufacture of bleaching powder, "Chloride of lime."
     - Bleaching and renovating of rags, jute, ramie, etc.
   - Caustic alkali industry.
     - Ammonia, caustic soda, potash salts, soda ash.
   - Chemical industries.
     - Alcohol, dehydration of.
     - Ammonia.

Barium products.
Bone ash.
Calcium acetate.
Calcium carbide.
Calcium cyanimid.
Calcium nitrate.
Fertilizers.
Magnesia.
Mercury, refining of.
Phenol.
Potassium salts.
Precipitated calcium carbonate.
Salt refining.
Sodium cyanide.
Sodium dichromate.
Wood alcohol.

Gas manufacture.
Coal gas and water gas purification.
Coke oven by-products.
Gas plant by-products.

Glass manufacture.
Bottle glass.
Glass tubing.
Plate glass.
Window glass.

Metallurgy.
Aluminium manufacture.
Brass manufacture.
Electric furnace flux.
Iron blast furnace flux.
Metal pickling.
Recovery of copper from smelter chimney dust.
Smelter flux.
Steel manufacture.
Steel purification.

Milling industry.
Clarifying grain.

Miscellaneous manufactures.
Asphalt industry.
Cork, carpets and linoleum.
Corn products manufacture.
Cotton and thread mills.
Flour manufacture.
Glue manufacture.
Medical and proprietary uses.
Polishing and buffing compounds.
Porcelain manufacture.
Pottery manufacture.
Rubber manufacture.

Oil, fat and soap manufacture.
Candles.
Glycerine.
Lubricating greases.
Neutralizing acidity of oils.
Renovation of butter.
Renovation of grease, fats, tallows, etc.
Soap.

Paint and varnish manufacture.
Calcimine.
Cold water paints.
Putty.
Refining linseed oil.
Varnish.

Paper industry.
Cooking paper stock.
Rag process.
Soda process.
Straw board.
Sulphate process.
Sulphite process.

Preserving industry.
Preserving eggs.

Sanitation.
Disinfectant and deodorizer.
Sewerage and garbage purification.
Water purification.

Smelting industry.
Reduction of iron ore.

Sugar manufacture.
Refining of beet and cane sugars.

Tanning industry.
Tanning cowhides, goat and kid hides, etc.

Water softening and purification.

Statistics.

Statistics of the lime industry for the United States may be found in the annual reviews in the Mineral Resources, published by the Geological Survey. They are omitted here because of the fact that 1918 are the latest available figures and also because they would take too much space.

READING LIST.

The compiler wishes to state at the very start of this list that it does not pretend to be complete. First of all, many of the references before 1900 have been omitted as being of only historical value. In the second place, no attempt has been made to include books which treat of the uses of lime in the various industries. For example, the best place to find a discussion of the use of lime and limestone in the paper industry is in the standard books on Papermaking, such as Griffin and Little, Witham, Cross and Bevan, etc. If such information is desired by any of the users of this reading list, the compiler will be very glad to furnish such information as he may have available. Such requests should be addressed to him at the National Research Council, Washington, D. C.

The Raw Material—Limestone.

Ball, S. H.—Portland cement materials in Eastern Wyoming. 1907. U. S. Geological Survey, bull. 315, p. 232-244.

Bastin, E. S.—Lime industry in Knox County, Maine. 1906. U. S. Geological Survey, bull. 285, p. 393-400.

Blatchley, R. S.—The Indiana oolitic limestone industry in 1907. 1907. Indiana, Department of Geology and Natural Resources, Annual Report, 1907, p. 299-459.

Blatchley, Willis S.—Lime industry in Indiana. 1903. Indiana Department of Geology and Natural Resources, Annual Report, 1903, p. 211-257.

Brantly, J. E.—Report on the limestones and marls of the costal plain of Georgia. 1916. Georgia Geological Survey, bull. 21. 300 pp.

Butler, Henry A.—Lime and cement resources of Missouri. 1907. Missouri Bureau of Geology and Mines, Report, vol. VI, 2nd Series, 225 pp.

Butts, C., and Eckel, E. C.—Iron ores, fuels and fluxes of the Birmingham district, Alabama. 1910. U. S. Geological Survey,

bull. 400. 204 pp.
Calhoun, Fred H.—Limestone and marl deposit of South Carolina. 1915. South Carolina Agricultural Experiment Station, bull. 183. 27 pp.
Clapp, Frederick J.—Limestones of Southwestern Pennsylvania. 1905. U. S. Geological Survey, bull. 249. 52 pp.
Clarke, F. W.—The data of Geochemistry. U. S. Geological Survey, bull. 491. 1911. Revised editions appeared as bull. 616, 1916 and bull. 695, 1920. Limestone, p. 546-573.
Cullen, John—Lime resources and industry in Oklahoma. 1917. Oklahoma Geological Survey, bull. 26. 70 pp.
Culm, Frank L.—Lime rocks. 1917. Arizona State Bureau of Mines, bull. 46.
Diller, J. S.—Limestones of the Redding district, California. 1903. U. S. Geological Survey, bull. 213.
Eckel, E. C., et al—Portland cement resources and industry in the United States. 1913. U. S. Geological Survey, bull. 522. 401 pp.
Foerste, August F.—Silurian and Devonian and Irvine formations of East Central Kentucky, with an account of their clays and limestones. Kentucky Geological Survey, bull. 7. 369 pp.
————Silurian and Devonian limestones of Western Tennessee. Journal of Geology 11, 553-583, 679-715 (Sept., Nov., 1903).
Frear, William—Pennsylvania limestones and lime supplies. 1913. Pennsylvania Agricultural Experiment Station, bull. 127, p. 71-106.
————and Holben, F. J.—Limestone resources of Pennsylvania (Supplementary report). Pennsylvania State College, Agricultural Experiment Station, Annual Report, 1914-1915, 366-406. See also, Annual Report, 1911-1912, p. 272-440.
Freeman, O. W.—Gypsum and lime industry in Central Montana. Mining and Engineering World, 45, 663-665 (1916); Chemical Abstracts 10, 3147.
Grimsley, George P—Clays, limestones and cements. 1906. West Virginia Geological Survey, Reports, vol. 3. 565 pp.
Hotchkiss, William O.—Limestone road materials of Wisconsin. 1914. Wisconsin Geological and Natural History Survey, bull. 34. 137 pp.
Howe, Malverd A.—Masonry. (1920?) New York, J. Wiley & Sons. 160 pp. Chapter II—Brick, lime, cement.
Kemp, J. F.—Handbook of rocks. 1911. 5th ed. New York, D. Van Nostrand Co.
Kummel, Henry B.—The chemical composition of the white crystalline limestones of Sussex and Warren Counties (N. J.) 1905. New Jersey, Geological Survey. Annual Report, 1905, p. 175-191. Reviewed in Chemical Abstracts 1, 30.
Lockhart, Oliver C.—The oolitic limestone industry of Indiana. 1910. Indiana University Studies, 1, No. 9, 97-110.
Logan, William N.—Preliminary report on the marls and limestones of Mississippi, 1916. Mississippi State Geological Survey, bull. 13, p. 7-82.
Martin, G. C.—Niobrara limestones of North Colorado as a possible source of Portland cement material. 1909. U. S. Geological Survey, bull. 380, p. 314-326.
Mathews, Edward B., and Grasty, John S.—The limestones of Maryland, with special reference to their use in the manufacture of lime and cement. 1910. Maryland, Geological Survey, Special Publications 8, part III, p. 227-484.
Maynard, Thomas P.—Report on the limestone and cement materials of Northern Georgia. 1912. Georgia Geological Survey, bull. 27. 293 pp.
Mills, A. P.—Materials of construction—their manufacture, properties and uses. New York, J. Wiley & Sons. 682 pp. Treats of quicklime, hydrated lime, hydraulic lime, etc.
Orton, Edward, and Peppel, S. V.—Limestone resources and the lime industry in Ohio. 1906. Ohio Geological Survey, 4th Series, bull. 4. 361 pp.
Reeside, John B.—The Hilderberg limestone of Central Pennsylvania. 1917. U. S. Geological Survey, Professional Papers 108K, p. 185-225.
Ries, Heinrich—Building stones and clay products. New York, J. Wiley & Sons. 415 pp.
————Lime and cement industries of New York. New York State Museum, bull. 44, vol. 8, p. 641-968. 103 plates.
————Limestones of New York and their economic value. 1899. New York State Museum, 51st Annual Report, vol. 2, p. 357-467.
Siebenthal, Claude E.—The Silver Creek hydraulic limestone of Southeastern Indiana. 1900. Indiana Department of Geology and Natural Resources, Annual Report, 1900, p. 333-389.
Udden, J. A.—The oolitic limestone industry at Bedofre and Bloomington, Indiana. 1910. U. S. Geological Survey, bull. 430, p. 335-345.
Wallis, B. Franklin—The geology and economic value of the Wapanucka limestone of Oklahoma. 1915. Oklahoma Geological Survey, bull. 23. 102 pp.
Williams, Ira A.—Limestone deposits in Oregon. 1914. Mineral Resources of Oregon, 1914, vol. 1, no. 7, 52-70.

Lime—General Books.

Baker, Ira O.—A treatise on Masonry construction. 10th ed. New York, J. Wiley & Sons. Part I. Stone, brick, lime, sand, etc.
Boudouard, Octave—Les chaux et ciment, la céramique et la verrerie. Paris, 1917. 64 pp.
Dancaster, Ernest A.—Limes and cements, their nature, manufacture and uses: an elementary treatise. New York, D. Appleton & Co., 1915. xii+ 212 p. illus.
Didbin, William J.—Lime, mortar and cement, their characteristics and analysis, with an account of artificial stone and as-

phalt. London, The Sanitary Publishing Co., Ltd. 1901. vii+ 227 p.
Directory of cement, gypsum and lime manufacturers. 14th ed. 1920. Chicago, The Cement Era.
Eckels, Edwin C.—Cements, lime and plasters, their materials, manufacture and properties. New York, J. Wiley & Sons, 1905. xxxiv+ 712 pp.
Gillmore, Quincy A.—Practical treatise on limes, hydraulic cements and mortars. New York, D. Van Nostrand Co., 1896. 334 pp. Professional Papers of the Corps of Engineers, U. S. A., No. 9.)
Goodrich Rubber Co.—Analysis of the cement and lime industry. 1920.
Leduc, E., and Chemi, G.—Lime, cements and plasters (In French). 1912? 252 pp.
Rogers, Allen, ed.—Manual of Industrial chemistry. 1921. New York, D. Van Nostrand Co. Chapter X. Lime, cement and plaster, p. 304-328.
U. S. Bureau of Standards—Lime, definition and specifications. 1920. Circular, Bureau of Standards, No. 106.
————Lime, its properties and uses. 1920. Circular, Bureau of Standards, No. 30, 2nd edition. 25 pp.
————Recommended specifications for quicklime and hydrated lime for use in the cooking of rags for the manufacture of paper. 1920. Circular, Bureau of Standards, No. 96. 5 pp.
————Rules and regulations for the enforcement of the lime barrel act. 1917. Circular, Bureau of Standards, No. 64. 6 pp.

Lime—General Articles.

Air-tight containers for lime—Concrete 15, suppl. 14 (July, 1919).
Bielert, R.—Lime and cement in Belgium. Tonind. Ztg. 34, 791-793. Chemical Abstracts 4, 2361.
Bodin, V.—Classification of lime and cement. Chimie Industrie 4, 43-48 (July, 1920).
Burchard, E. F., and Emley, Warren E.—Source, manufacture and use of lime. 1913. U. S. Geological Survey, Mineral Resources, 1913, II, p. 1509-1593.
Camp, Henry M.—The open price policy. Proc. Nat. Lime Mnfr. Assoc. 14, 197-201 (+916).
Chapman, C. M.—Lime putty and cream of lime. Eng. Rec. 69, 394-395, C. A. 8, 2051.
Cramer, E.—Investigation of the constituents of lime. Tonind. Ztg. 32, 222; C. A. 2, 1869.
Day, Arthur L., and Shepherd, E. S.—The lime-silica series of minerals. Am. J. Sci. 22, 265-302 (1906); C. A. 1, 28.
Definition and classification of lime—Sci. Am. Suppl. 80, 133 (Aug. 28, 1915).
Emley, Warren E.—Work of the lime section of the Bureau of Standards. Proc. Nat. Lime Mnfr. Assoc. 12, 254-263 (1914).
Fisher, L. A.—The standard barrel and the law. Proc. Nat. Lime Mnfr. Assoc. 14, 46-49 (1916).
French specifications for cement and hydraulic lime. Ciment 17, 213-215; C. A. 7, 236.
Goosman, J. C.—By-products of lime. Lime light[1], 225-228 (1908).
Jones,——.—New fields for lime developed by the war. Concrete 13, suppl. 3-4 (July, 1918).
Kessinger, F. E.—The paper bag vs. cotton and burlap. Proc. Nat. Lime Mnfr. Assoc. 13, 217-236 (1915).
Lagenbeck, Karl—Raising the market for lime. Proc. Nat. Lime Mnfr. Assoc. 12, 33-347 (1914).
Lazelle, E. W.—Proposed specifications for lime. Proc. Nat. Lime Mnfr. Assoc. 12, 74-82 (1914).
Loughlin, G. F.—Magnesia in limestone. Proc. Nat. Lime Mnfr. Assoc. 14, 22-32 (1916).
Macgregor, J. S.—Report of the committee C-7 on standard specifications for lime. Am. Soc. Testing Materials, Proc. 15, I, 167-172 (1915); C. A. 10, 379.
Martin, Pater—How to improve the selling end of the lime business. Proc. Nat. Lime Mnfr. Assoc. 14, 185-196 (1916).
Meade, R. K.—Composition, manufacture, properties and uses of lime. Concrete Cem. 5, 20-22 (July, 1914); C. A. 8, 3229.
————Valuation of lime for various purposes. Concrete 10, suppl. 17-20, 25-28 (Mar., Apr., 1917); J. Ind. Eng. Chem. 10, 214-219 (Mar., 1918).
National Lime Manufacturers' Association—*Hydrated Lime Bureau*—(See the various bulletins issued by this bureau).
Peppel, S. V.—Uses of lime. Lime Light, 106-113 (1904).
Random notes on lime. Am. Arch. 116, 292 (Aug. 27, 1919).
Scott, P. Rankin—Chemistry of lime. J. Agr. Victoria 10, 602-607; C. A. 7, 544.
Seger, H., and Cramer, E.—Is lime obtained as a by-product from carbon dioxide manufacture inferior? Tonind. Ztg. 35, 744-745; C. A. 5, 3131.
————and Cramer, E.—Vienna lime. Tonind. Ztg. 36, 1258; C. A. 7, 544.
Specifications for lime—Tonind. Ztg. 35, 1405-1407; C. A. 6, 1218.
Standard terms for lime materials—Concrete 15, suppl. 75 (Nov., 1919).
Warner, C.—Creating a market for lime products. Concrete 11, 3-4, 13-14 (July, Aug., 1917).
————Reconstruction and peace-time problems of the lime industry. Concrete 14, suppl. 7-9 (Jan., 1919).
————Sales promotion policies of the lime industry. Proc. Nat. Lime Mnfr. Assoc. 12, 125-142 (1914).
Wason, L. C.—Water required to reduce quicklime to a paste. Canadian Engineer 20, 504; C. A. 5, 2168.
Whetzel, J. C.—Effect of exposure on com-

[1]Lime Light is the collected papers of the National Lime Manufacturers' Association from 1903 to 1909. After that the proceedings were published each year.

mercial limes. J. Ind. Eng. Chem. 9, 287-290 (Mar., 1917).
Williams, Ira A.—Tests of Iowa limes. 1907. Engineering Experiment Station, Iowa State College, bull. IV, No. 1 (Whole No. 19). 59 pp.

Lime—Manufacture.

Bleininger, A. V., and Emley, W. E.—Burning temperature of limestone. Trans. Nat. Lime Mnfr. Assoc. 1911, 68-78; Trans. Am. Ceram. Soc. 13, 618-638; C. A. 6, 918.
Boere, Joseph—Generalities on crushing. Proc. Nat. Lime Mnfr. Assoc. 13, 38-47 (1915).
Bowles, Oliver—Labor saving at limestone quarries. 1919. Bureau of Mines, Technical paper no. 203. 26 pp.
Bradley, W. H.—Duff system of burning lime. Proc. Nat. Lime Mnfr. Assoc. 13, 15-20 (1915).
Brinsmade, R. B.—Modern lime burning plant. Mines and Minerals, 27, 137-138 (Oct., 1906); C. A. 1, 92.
Broomell, A. P.—The modern limekiln. Proc. Nat. Lime Mnfr. Assoc. 1910, 66-69.
Burning lime with producer gas—Tonind. Ztg. 38, 1363-1366; C. A. 8, 3229.
Carson, W. E.—Fire brick linings for lime kilns. Lime Light, 145-150 (1906).
————The throttle valve of the lime plant. Lime Light, 181-186 (1907).
Cedar Hollow lime kilns—Chem. Met. Eng. 21, 491-493 (Oct. 15, 1919).
Cedar Hollow, Pa., plant of Charles Warner Co.—Concrete 13, suppl. 13-15 (Aug., 1918).
Chapman, W. B.—Producer gas and its application to lime burning. Proc. Nat. Lime Mnfr. Assoc. 12, 184-206 (1914).
Cobb, C. W. S.—Lime manufacturer's experience with gas as a fuel and the gas producer as applied to the manufacture of lime. Proc. Nat. Lime Mnfr. Assoc. 1911, 82-86.
Consumption of coal in burning lime—Tonind. Ztg. 34, 65-66, 136; C. A. 4, 1230.
Dodge, H. P.—Application of producer gas to lime kilns. Lime Light, 92-101 (1904).
Donaldson, R. D.—Application of central station power to lime plants and quarries. Proc. Nat. Lime Mnfr. Assoc. 14, 256-270 (1916).
————Cost of operating motors in lime plants and quarries. Elec. World 68, 326 (Aug. 12, 1916).
Eakins, E. E.—Decarbonization of dolomitic limestone in the rotary kiln. J. Ind. Eng. Chem. 11, 340 (Apr., 1919); Concrete 14, suppl. 69-70 (June, 1919); C. A. 13, 1007.
Eckert, H.—Lime dust. Tonind. Ztg. 40, 139 (1916); C. A. 10, 2979.
Edwards, R. S.—Rotary kiln from the lime manufacturer's standpoint. Lime Light, 170-177 (1907).
Elkstrand, Charles—Study of combustion in lime burning. Lime Light, 204-206 (1908).
Emley, W. E.—Comparative values of different kinds of fuel for lime burning. Proc. Nat. Lime Mnfr. Assoc. 14, 282-287 (1916).
————Heat efficiency of lime kilns. Proc. Nat. Lime Mnfr. Asso. 10, 95-107 (1912).
————Kiln design. Proc. Nat. Lime Mnfr. Assoc. 8, 90-107 (1910).
————Manufacture of lime. 1913. Bureau of Standards, Technical Paper no. 16. 130 pp. 13 plates.
————Some investigations on lime. Proc. Nat. Lime Mnfr. Assoc. 8, 48-50 (1910).
Faber, W. J.—Manufacture of lime. Sci. Am. Suppl. 88, 316 (Nov. 29, 1919).
Fletcher, Charles C.—Home production of lime by the farmer. U. S. Department of Agriculture, Year Book, 1919, p. 335-341. illus.
Forgy, J. E.—Study of several types of lime kilns. Proc. Nat. Lime Mnfr. Assoc. 10, 68-90 (1913).
Frear, W.—Cost of burning lime in the stack. 1919. Pennsylvania Agricultural Experiment Station, bull. 157. 23 pp.
Gawthrop, H. A.—How should the modern lime kiln be constructed. Proc. Nat. Lime Mnfr. Assoc. 8, 28-37 (1910).
Genard, ——.—Operation of the lime kiln. Chemiste 2, 337-339; C. A. 6, 675.
Grasty, J. S.—Valuation of limestone for calcination. Mining World 35, 641-642; C. A. 6, 675.
Groud, Ch.—Manufacture of lime without special apparatus. Rev. gen. sci. pur. appl. 20, 939; C. A. 4, 954.
Hamilton, W. L.—Requirements in fire bricks for lime kiln arches and linings. Proc. Nat. Lime Mnfr. Assoc. 10, 128-136 (1912); C. A. 7, 1274.
Hull, Walter A.—Investigation of fire-resisting materials, particularly as related to limestone concrete. Proc. Nat. Lime Mnfr. Assoc. 14, 289-302 (1916).
Hunkins, D. S.—Developments of lime kiln construction in the Middle West. Lime Light, 345-351 (1909).
Jones, J. G.—Rotary kiln for lime burning. Proc. Nat. Lime Mnfr. Assoc. 12, 349-364 (1914).
Kelley, W. H.—Fire brick for the lime kiln. Proc. Nat. Lime Mnfr. Assoc. 14, 275-279 (1916).
Kiln for lime burning—Sci. Am. Suppl. 80, 7 (July 3, 1915).
Kirkpatrick, W. C.—Fuel economy and uniform production. Proc. Nat. Lime Mnfr. Asoc. 13, 27-37 (1915).
Latham, Edgar H.—The solving of the plasticity problem. Proc. Nat. Lime Mnfr. Assoc. 12, 235-242 (1914); Concrete Cement Age 6, Mill Ed., 9-11 (1915); C. A. 9, 854.
Lazell, E. W.—Lime burning. Lime Light, 234-241 (1908).
Lime burning—Sci. Am. Suppl. 80, 67 (July 31, 1915).
Making lime from marble—Sci. Am. 115, 580 (Dec. 30, 1916).
Meade, R. K.—Equipment and processes in the manufacture of lime. Concrete Cement Age 4, Mill ed. 60-63.
————Reburning of lime from alkali waste and other forms of precipitated carbonate of lime. Met. Chem. Eng. 13, 289-290 (May, 1915); C. A. 9, 1670.

Mount, W. D.—Burning lime in a gas-fired continuous kiln. Chem. Met. Eng. 20, 428-430 (Apr. 15, 1919); Concrete 14, suppl. 63-64 (June, 1919), C. A. 13, 1629.

Nagel, Oscar—Gas firing for lime and cement kilns. Cassier's Mag., Sept., 1909, 408-419.

New lime plant of the Ladd Lime and Stone Co.—Concrete 17, suppl. 79-82 (Dec., 1920).

New plant of the Kelly Lime and Transport Co., Buffalo—Concrete 14, suppl. 49-54 (May, 1919).

Palmer, W. S.—Formation of quicklime in roasting ores from Manhattan, Nev. Eng. Min. J. 104, 525-526, 883-884, 1087 (Sept. 22, Nov. 17, Dec. 22, 1917); C. A. 11, 3011.

Payne, J. H.—Lime recovery from spent causticizing mud. J. Ind. Eng. Chem. 7, 1056-1059 (Dec., 1915); C. A. 10, 510.

————Recovery of spent lime from causticizing operations. J. Ind. Eng. Chem. 6, 937-939 (Nov., 1914); C. A. 8, 3840.

Peppel, S. V.—Heat temperatures in lime kilns as related to the fuel problem. Lime Light, 370-377 (1909).

Porter, John J., and Whetzel, J. C.—Operation of gas producers for lime burning. Proc. Nat. Lime Mnfr. Assoc. 13, 332-337 (1915).

Power requirements for driving lime plants —Elec. World 72, 1026 (Nov. 30, 1918).

Schlenkhoff, W.—Rotary kilns for lime. Tonind. Ztg. 36, 435; C. A. 6, 1833.

Schmatolla, E.—Gas producers and gas lime kilns. Proc. Nat. Lime Mnfr. Assoc. 10, 6-30 (1912).

————Producer gas-fired lime plants. Proc. Nat. Lime Mnfr. Assoc. 8, 108-112 (1910); Chem. Eng., Mar., 1910, 73-76; Rock Products 9, 39-41; C. A. 4, 1230.

————Shaft lime kiln with producer gas firing. Tonind. Ztg. 38, 707-709 (1914); C. A. 9, 240.

Scott, R. S.—Electricity in the lime plant. Proc. Nat. Lime Mnfr. Assoc. 13, 270-290 (1915).

Seaver, ——.—Use of silica brick in lime kilns during 1913. Proc. Nat. Lime Mnfr. Assoc. 12, 56-60 (1914).

Seward, A. C.—Gas fired kilns. Lime Light, 215-219 (1908).

Sheldon, W. S.—Study of the lime situation. Lime Light, 309-320.

Smith, H. L.—Making lime from marble quarry waste. Concrete 10, suppl. 39-42 (June, 1917).

Spencer, A. N.—Study of the lime kiln lining problem. Lime Light, 351-359 (1909).

Thurlow, L. W.—Manufacture of lime in the Philippine Islands. Philipp. J. Sci. 11A, 129-133 (1916); C. A. 10, 3147.

Urschell, Wm.—Method of burning lime by the Woodville Lime & Cement Co. Proc. Nat. Lime Mnfr. Assoc. 13, 71-73 (1915).

Whyte, G. W.—Theory and phenomenon of the gas producer as a piece of apparatus and as applied to the lime kiln. Proc. Nat. Lime Mnfr. Assoc. 9, 99-106 (1911).

Wilson, Rex C.—Modern lime kilns, the plant of the Knickerbocker Lime Co., Mill Lane, Pa. Eng. News 59, 109-110; C. A. 2, 1034.

Wood, A. T.—Use of rotating kiln for calcining lime. Met. Chem. Eng. 16, 402-403 (Apr. 1, 1917).

Lime—Properties, Reactions, Specifications.

American Society of Testing Materials—Proposed standard specifications for lime. Proc. Nat. Lime Mnfr. Assoc. 12, 86-91 (1914).

Arndt, K., and Loewenstein, W.—Solution of lime and silica in molten calcium chloride. Z. Elektrochem. 15, 784-790; C. A. 4, 551.

Bates, P. H.—Hydraulic properties of calcium aluminates. J. Am. Ceram. Soc. 1, 679-696 (1918); C. A. 13, 1006.

Bell, J. M., and Taber, W. C.—Action of lime in excess on copper sulphate solution. J. Phys. Chem. 11, 632-636; C. A. 2, 748.

Bever, S. W.—Physical tests of Iowa limes. 1906. Iowa Geological Survey, bull. 17, p. 91-150.

Bleininger, A. V.—The physical properties of lime. Proc. Nat. Lime Mnfr. Assoc., 1909, 365-369.

Bodenstein, ——.—Equilibrium measurements between line and carbon and between calcium carbide and carbon monoxide. Chem. Ztg. 36, 606; C. A. 7, 1831.

Burchard, E. F.—Chemical uses of lime. Alabama Geological Survey, bull. no. 12, page 40.

Burdakov, V. Ya.—Hydration of calcium oxide. J. Russ. Phys. Chem. Soc. 44, 1325-1334; C. A. 7, 738.

Cameron, F. K., and Potter, H. E.—Solubility of lime in aqueous solutions of sugar and glycerol. J. Phys. Chem. 15, 67-72; C. A. 5, 1359.

————and Robinson, W. O.—The system lime, nitric acid, water. J. Physic. Chem. 11, 273-278; C. A. 1, 1663.

Campbell, E. D.—Formation of tricalcium aluminate. J. Ind. Eng. Chem. 9, 943-946 (1917); C. A. 11, 2953.

Cavalier, J.—Qualities required in lime and cement. Trav. sci. univ. Rennes 5, 90-102; C. A. 2, 582.

Cavazzi, A.—Changes in volume that take place in the solution of calcium oxide and hydroxide. Gazz. chim. ital. 45, I, 529-533 (1915); C. A. 10, 1456.

Chemical and physical properties of lime—Sci. Am. Suppl. 80, 368 (Dec. 4, 1915).

Chemical lime—Sci. Am. Suppl. 80, 47-48 (July 17, 1915).

Chugaev, L. A., and Khlopin, V. G.—New method of determining solubility at different temperatures. J. Russ. Phys. Chem. Soc. 46, 1659-1668 (1914); C. A. 9, 2170.

Chumanov, S.—Hydration of calcium oxide. J. Russ. Phys. Chem. Soc. 44, 201-204; C. A. 6, 1409.

Classen, H.—Solubility of lime in sugar solution. Z. Ver. Zuckerind. 61, 489-509; C. A. 5, 3634.

Cobb, John W.—The sythesis of glass, glaze or other complex silicate. The interaction

of lime and silica. J. Soc. Chem. Ind. 29, 69-74, 608-614; C. A. 4, 92, 1092, 2194.

de Coninck, O.—Molecular weight of lime. Compt. rend. 153, 1479-1480; C. A. 6, 841.

Emley, W. E.—Instrument for measuring plasticity. Trans. Am. Ceram. Soc. 19, 523-533 (1917); C. A. 12, 610.

————Quality of limestone and lime. Mining Sci. 66, 410-411; C. A. 7, 879.

Endell, K.—Significance of reactions in the solid state for the burning of limestone. Tonind. Ztg. 39, 73, 85-86, 107-108 (1915); C. A. 9, 2444.

Ferguson, J. B., and Merwin, H. F.—The ternary system, CaO-MgO-SiO_2. Proc. Nat. Acad. Sci. 5, 16-18 (1919); Am. J. Sci. 48, 81-123 (1919); C. A. 13, 1060.

Field, A. L., and Royster, P. H.—Temperature and viscosity relations in the ternary system Al_2O_3-CaO-SiO_2. Bureau of Mines, Technical bull. no. 189. Bull. Am. Inst. Min. Eng. 1917, 2037-2043; C. A. 12, 246.

de Forcrand, ——.—Heat of formation of the anhydrous oxides of strontium and barium. Compt. rend. 146, 217-220; C. A. 2, 1222.

Gardiner, R. F.—Solubility of lime, magnesia, potash and such minerals in epidote, chrysolite and muscovite. J. Agr. Research 16, 259-262 (1919); C. A. 13, 1510.

Gautier, H.—Thermal properties of lime prepared at different temperatures. Compt. rend. 128, 939-941; J. Soc. Chem. Ind. 18, 585.

Gray, Jas.—Influence of moist air on quicklime. J. Chem. Met. Soc. S. Africa 9, 396-398; C. A. 3, 2617.

Guthrie, A.—Solubility of lime in water at different temperatures. J. Soc. Chem. Ind. 20, 223-224 (1901).

Hanna, Harold H.—Study of the most fusible mixture of K_2O, CaO, Al_2O_3 and SiO_2. Trans. Am. Ceram. Soc. 17, 672-690 (1915); C. A. 10, 680.

Hedwell, J. A.—Formation and decomposition temperatures of the carbonates of silicon, calcium, barium and magnesium. Z. anorg. allgem. Chem. 98, 47-56 (1916); C. A. 11, 562.

Jänecke, E.—The compound 8 CaO.Al_2O_3.2 SiO_2, the chief component (alite) of Portland cement clinker. Z. anorg. Chem. 89, 355-369 (1914); C. A. 9, 1540.

Kanolt, C. W.—Melting points of some refractory oxides. J. Wash. Acad. Sci. 3, 315-318; C. A. 7, 2891.

Kirkpatrick, F. A., and Orange, W. B.—Tests of clays and limes by the Bureau of Standards plasticimeter. J. Am. Ceram. Soc. 1, 170-184 (1918); C. A. 12, 2673.

Koref, F.—Measurements of specific heats at low temperatures. Ann. Physik 36, 49-73; C. A. 6, 174.

Kosmann, ——.—Estimation of the specific gravity of quicklime. Tonind. Ztg. 23, 413-414 (1899); J. Soc. Chem. Ind. 18, 1124.

Kühl, Hans.—The compound 8 CaO.Al_2O_3.2 SiO_2 and the alite of Portland cement clinker. Tonind. Ztg. 38, 365-368; C. A. 8, 1653.

Latschenko, P. M.—Heat transformation of polymorphic minerals. Proc. Don. Polytech. Inst. 2, 46 pp. 1913. C. A. 9, 2045.

————Specific heats of baryta, witherite and fused lime. Compt. rend. 147, 58-61; C. A. 2, 2758.

Levi, L. E., and Manuel, E. V.—Influence of temperature on the reaction between commercial arsenic sulphide and lime. Collegium 1910, 309-311; C. A. 5, 2757.

————, and Orthmann, A. C.—Action of air upon lime. J. Am. Leather Chemists' Assoc. 6, 593-597; C. A. 6, 945.

Magnus, A.—Measurements of the specific heats of solids at higher temperatures. Physik. Z. 64, 5-11; C. A. 7, 2146.

Milbauer, J.—Action of oxygen on metallic oxides at higher temperatures and pressures. Chem.-Ztg. 40, 587 (1916); C. A. 10, 2558.

Milikan, J.—Oxyhalides of the alkaline earths. Equilibria in ternary systems. Z. Physik. Chem. 92, 59-80 (1916); C. A. 11, 923.

Moissan, H.—Some properties of lime while in a state of fusion. Bull. soc. chim. 27, 660-666 (1902); Compt. rend. 134, 136-142 (1902); J. Soc. Chem. Ind. 21, 406, 1041.

Moody, G. T., and Leyson, L. T.—Solubility of lime in water. J. Chem. Soc. 93, 1767; C. A. 3, 623.

Mott, W. R.—Relative volatility of refractory materials. Trans. Am. Electrochem. Soc. 34; C. A. 13, 1052.

Nernst, W.—Researches on specific heats at low temperatures. Sitz. kgl. preuss. Akad. Wiss. 12-13, 247-261; C. A. 4, 2396.

Neumann, B.—System lime- alumina-silica and its relation to blast furnace slag and Portland cement. Stahl u. Eisen 38, 953-960; C. A. 13, 141.

Nielsen, Otto—System calcium oxide, phosphorus pentoxide, silica. Ferrum 10, 97-11; C. A. 7, 1333.

Niggli, Paul—Equilibrium between titanium dioxide and carbon dioxide as well as silica and carbon dioxide in alkali, alkali-lime and alkali-aluminate melt. Z. anorg. allgem. Chem. 98, 241-326 (1916); C. A. 11, 757.

Pellet, H., and Weisberg, J.—Solubility of lime in sugar solutions at different temperatures. Bull. assoc. chim. sucr. dist. 18, 773-778, 778-780 (1901); J. Soc. Chem. Ind. 20, 733.

Phillipi, H., and Theusner, M.—Lime and lime alumina silicates. Sprechsaal 41, 645-647; C. A. 3, 233.

Potter, R. S., and Snyder, R. S.—Carbon and nitrogen changes in soils variously treated. Soil Science 1, 76-93 (1916); C. A. 10, 947.

Properties of lime from limestones containing magnesia.—Tonind. Ztg. 39, 518-519; C. A. 10, 681.

Rankin, G. A.—The ternary system CaO-

Al_2O_3-SiO_2. Am. J. Sci. 39, 1-79 (1915); C. A. 9, 702.

————, and Merwin, H. E.—Ternary system calcium oxide—aluminum oxide and magnesium oxide. J. Am. Chem. Soc. 38, 568-588 (1916); C. A. 10, 864.

————, and Wright, F. E.—Hypothetical combination 8 $CaO.Al_2O_3.2\ SiO_2$ in Portland cement clinker. Z. anorg. Chem. 75, 63-67; C. A. 6, 1829. Compare Z. anorg. Chem. 74, 428; 76, 357-360.

Rieke, R.—Fusibility of lime alumina silica mixtures. Stahl u. Eisen 28, 16-18 (Jan. 1, 1908); Sprecksaal 40, no. 44, 45, 46; C. A. 2, 985, 1179.

Ruff, Otto—Electric vacuum oven. Ber. 43, 1564-1574; C. A. 4, 3026.

————Fusion and vaporization of refractory oxides in the electric vacuum furnace. Z. Anorg. Chem. 82, 373-400; C. A. 7, 3935.

————, and Goecke, Otto—Melting and vaporization of our so-called high refractories. Z. angew. Chem. 24, 1459-1465; C. A. 6, 1569.

Sborgi, U.—The system calcium oxide, boron trioxide, water at 30°. Atti accad. Lincei 22, I, 636-642, 715-719, 798-801; C. A. 7, 3092.

Seger, H., and Cramer, A.—Decomposition (of silicates) by lime. Tonind. Ztg. 35, 1514; C. A. 6, 1348.

Selivanov, Th.—Hydrates of calcium oxide and their molecular combination. I. Composition of amorphous calcium hydroxide. J. Russ. Phys. Chem. Soc. 44, 1797-1813; 45, 1535-1556; C. A. 7, 946; 8, 505; Z. anorg. Chem. 85, 329-352; C. A. 8, 1718.

Shepherd, E. S., and Rankin, G. A.—Binary system of alumina with silica, lime and magnesia. Am. J. Sci. 28, 293; C. A. 3, 2925.

————Ternary system calcium oxide, alumina, silica. J. Ind. Eng. Chem. 3, 211-227; C. A. 5, 1982.

Sosman, Robert B.—Common refractory oxides. J. Ind. Eng. Chem. 8, 985-990 (1916); C. A. 10, 3146.

————, and Merwin, H. E.—Preliminary report on the system lime-ferric oxide. J. Wash. Acad. Sci. 6, 532-537 (1916); C. A. 10, 2673.

Stähler, A.—Action of calcium oxide on hydrazine hydrate. Ber. 42, 3018-3019; C. A. 4, 153.

Thompson, M. D.—Equilibrium in the system consisting of calcium oxide, carbon, calcium carbide and carbon monoxide. Proc. Am. Acad. 45, 431-452; Met. Chem. Eng. 8, 279-281, 324-328; C. A. 4, 2406.

Tillotson, Edwin W.—Relation between the physical properties and chemical composition of glass. VIII. Molecular compounds. J. Am. Ceram. Soc. 1, 76-93 (1918); C. A. 12, 2240.

Trede, Erich, and Birnbrauer, Erich.—Special method for producing higher temperatures in vacuo and the behavior of some metals, oxides and carbides. Z. anorg. Chem. 87, 129-168; C. A. 8, 2854.

Vignon, Leo.—Action of water vapor on carbon in the presence of lime. Compt. rend. 152, 871-874; C. A. 5, 2044.

Washburn, Edward W.—Latent heats of fusion of lime and magnesia. Trans. Am. Ceram. Soc. 19, 195-200 (1917); C. A. 12, 522.

Weisberg, J.—Solubility of lime in sugar solutions. Bull. soc. chim. (3) 23, 740-745 (1900); J. Soc. Chem. Ind. 19, 1028.

————Solubility of lime in sugar solutions. Bull. assoc. chim. sucr. dist. 29, 67-70; C. A. 6, 1236.

Wilks, W. A. R.—Adsorption of halogen by dry lime. J. Chem. Soc. 101, 366-374; Z. chem. ind. Kolloide 2, 12-17; C. A. 6, 1719; 7, 31.

Zavrieff, D.—The dissociation of calcium carbonate. Compt. rend. 145, 428; J. chim. phys. 7, 31-57; C. A. 1, 2985; 3, 1112.

Hydrated Lime.

Air slaked lime not a substitute for hydrated lime in stucco work.—Concrete Cement 3, 118 (Sept., 1913).

Bachtenkircher, H. E.—Development of hydration, 1910. Rock Products 10, 41; Proc. Nat. Lime Mnfr. Assoc. 1911, 209-212; C. A. 5, 1503.

————Hydrated lime investigations. Lime Light, 223-225 (1908).

————Hydration problem to date, 1909. Lime Light, 337-339 (1909).

————Manufacture and uses of hydrated lime. Chem. Eng. 18, 189-192; C. A. 8, 564.

————Some further observations on the hydration problem. Proc. Nat. Lime Mnfr. Assoc., 1910, 73-77.

Baker, E. G.—Ohio hydrate and supply company expanding. Concrete 17, suppl. 1-5 (July, 1920).

Bingham, S. Y.—Hydrated lime. Eng. News 50, 543 (June 9, 1904).

————Manufacture and properties of hydrate of lime. Eng. News 50, 177-179 (Aug. 27, 1903).

Crow, W.—Chemically correct hydrate of lime on a commercial basis. Proc. Nat. Lime Mnfr. Assoc., 1916, 164-171.

Dry slacking of lime.—Tonind. Ztg. 35, 1248-1249; C. A. 6, 283.

Edwards, ——.—Hydrated lime and lime tests. Lime Light, 154-166 (1906).

Emley, W. E.—Compressive method of studying plasticity. Proc. Nat. Lime Mnfr. Assoc. 14, 13-16 (1916).

————Measurement of the plasticity of hydrated lime by the compression method. Proc. Nat. Lime Mnfr. Assoc. 13, 246-250 (1915).

————Practical method for comparing the working qualities of hydrates. Proc. Nat. Lime Mnfr. Assoc. 14, 175-194 (1916).

————and Stearns, O. F.—Revision of the standard specifications for hydrate lime. Proc. Nat. Lime Mnfr. Assoc. 1917; 17 p.

Haff, R. C.—Tests and uses of hydrated lime. Cement Era., Feb., 1915.
Hitchcock, L.—The fourth year's development of hydrated lime plastering. Proc. Nat. Lime Mnfr. Assoc. 13, 143-159 (1915).
————The hydrated lime bureau. Proc. Nat. Lime Mnfr. Assoc. 14, 66-72 (1916).
————Hydrated lime plastering, the bright future of the lime industry. Proc. Nat. Lime Mnfr. Assoc. 12, 285-314 (1914).
Hough, N. G.—Field work of the hydrated lime bureau. Proc. Nat. Lime Mnfr. Assoc. 14, 75-81 (1916).
Howes, B. A.—Problems in the use of hydrated lime. Concrete Cement 4, 290-291 (June, 1914).
Hydrated lime.—Sci. Am. Suppl. 80, 91 (Aug. 7, 1915); 84, 117 (Aug. 25, 1917).
Hydrated lime and faulty brick piers.—Eng. Rec. 74, 539 (Oct. 28, 1916).
Influence of hydrated lime.—Ry. Age 63, 456 (Sept. 14, 1917).
Joseph, W. B.—Hydrated lime. Cement Eng. News, Feb., 1915, 45-46.
Kiepenheuer, L.—Hydration of slaked dolomite lime. Tonind. Ztg. 39, 696 (1915); C. A. 10, 1087.
Kritzer, C.—Hydrating lime as a business proposition. Proc. Nat. Lime. Mnfr. Assoc. 12, 208-214 (1914).
Lauman, A. H.—Lime hydrating plant of the National Mortar and Supply Co. Proc. Nat. Lime Mnfr. Assoc. 13, 265-269 (1915).
Lazell, E. W.—Advantages in use of commercially hydrated over ordinary slaked lime. Concrete Cement 6, 139-140 (Mar., 1915); Cement Eng. News, 1915, 125-126.
————Hydrated lime, history, manufacture and uses in plasters, mortar and cement. A manual for the architect, engineer and contractor and builder, Pittsburg: Jackson and Remlinger Printing Co., 1915. 95 pp. illus.
————Hydrated lime and cement mortars. Proc. Am. Soc. Testing Materials, 8, 418-422 (1908).
————Is hydrated lime the coming commercial form of lime? Proc. Nat. Lime Mnfr. Assoc. 12, 469-477 (1914).
————Some uses and tests of lime and hydrated lime. Lime Light, 135-143 (1905).
————Standardization of hydrated lime. Lime Light, 361-365 (1909); Proc. Nat. Lime Mnfr. Assoc. 10, 227-234 (1912).
————Waterproofing with hydrated lime. Waterproofing and Fireproofing 3, 5-6; C. A. 3, 2214.
McCullough, E.—Methods of manufacturing hydrated lime. Mining World, Dec. 3, 1910, 1049-1050.
Mannell, Stewart.—Manufacture of hydrated lime in the state of Washington. Concrete Cement Age 5, suppl. 23-24 (1914).
Meade, R. K.—Cement and hydrated lime plant of the Tidewater Portland Cement Co. Eng. News 70, 858-864 (Oct. 30, 1913).
————Hydrated lime and its use. Concrete Cement 1, 89 (Dec., 1913).
————Hydrated lime, what it is and how used. Concrete Cement 3, 208-209 (Nov. 1913); C. A. 8, 228.
————Manufacture and properties of hydrated lime. Eng. News 65, 554 (May 11, 1911); C. A. 5, 2914; Proc. Nat. Lime Mnfr. Assoc. 10, 151-176; C. A. 7, 1274.
————Methods and equipment in the manufacture of hydrated lime. Concrete Cement Age 7, Mill ed. 13-17 (1915); C. A. 9, 3346.
————Modern cement and hydrated lime plant. Union Bridge, Md. Eng. News 70, 859-860 (Oct. 30, 1913).
————Modern hydrated lime plant. J. Ind. Eng. Chem. 7, 427-430 (May, 1915); C. A. 9, 1837; Proc. Nat. Lime Mnfr. Assoc. 11, 322-331 (1915); Cement Eng. News, June, 1916, 132-135.
Modern hydrated lime plant.—Cement Eng. News, Oct., 1916, 218-219.
Modern hydrated lime plant, Vermont Marble Co., Met. Chem. Eng. 15, 50-51 (July 1, 1916).
Nagy, B.—Hydrated lime and its qualifications as a structural material. Eng. Soc. W. Pa. 33, 457-473, 474-488 (Oct., 1917); C. A. 12, 616.
————Hydrated lime in drain tile. Concrete 11, 122-123 (Oct., 1917).
Perry, O. F.—Hydrated lime. Lime Light, 30-31 (1904).
Peppel, S. V.—Lime experiences. Rock Products 3, 17 (1904).
Road engineer experiments with hydrated lime. Eng. Rec. 71, 798-799 (June 20, 1915).
Salte, M. A.—Hydrated lime for macadam and earth roads. Eng. Rec. 65, 261; C. A. 6, 1354.
Spackman, H. S.—Possibilities of hydrated lime products for plastering purposes. Proc. Nat. Lime Mnfr. Assoc. 13, 160-170 (1915).
Tentative specifications for mason's hydrated lime. Proc. Am. Soc. Testing Materials, 17, I, 601-604 (1917); C. A. 12, 857.
Use of hydrated lime. Eng. Rec. 51, 640.
Use of hydrated lime in dam construction. Eng. Rec. 70, 531 (1914); C. A. 9, 240.
Use of hydrated lime in wall tile manufacture. Concrete Cement 5, 161-162 (Oct., 1914).
Vaubel, W.—Slaking hydraulic lime. Tonind. Ztg. 36, 1299-1300; C. A. 6, 3173.
Warner, C.—Hydrated lime. Eng. News 50, 320-321 (Oct. 8, 1903).
————Standards adopted by manufacturers of hydrated lime. Eng. New 52, 220 (Sept. 8, 1904).
————Strength tests of mixtures of hydrated lime and Portland cement. Eng. News 50, 544 (Dec. 17, 1903).
Waurziniok, O.—Fire risk in slaking lime. Tonind. Ztg. 38, 1423-1424 (1914); C. A. 9, 240.

Analytical Methods.

Baker, W. E. B.—Limestone analysis. Paper 26, no. —, 70 (April 21, 1920).

Barney, L. W.—Rapid estimation of available calcium oxide in lime used in cyanide work. J. Ind. Eng. Chem. 2, 407-409; C. A. 5, 44.

Bennett, H. C.—Analysis of tannery lime liquors. Collegeum 1915, 258-266, 313-322, 329-335; J. Am. Leather Chemists's Assoc. 11, 98-130; C. A. 10, 1285.

Bred, J.—Determination of free lime in cements after grinding and after hardening. Proc. Intern. Assoc. Testing Materials, 2, 18 (1912); C. A. 6, 2990.

Catlett, Charles.—Quantitative field test for magnesia in cement rock and limestone. Cement Eng. News 19, 281; C. A. 2, 695.

Directions for uniform testing of lime. Z. offent. Chem. 18, 12-18; C. A. 6, 1062.

Emley, Warren C.—Tests of lime. Proc. Nat. Lime Mnfr. Assoc. 1911, 192-199.

Gerard, M.—Field tests of lime. Ciment 18, 151-153; C. A. 7, 4056.

Gortner, R. A.—Rapid method for the estimation of calcium oxide in peat soil. Soil Science 1, 503-508 (1916); C. A. 10, 3126.

Hopkins, Cyril G.—New limestone tester. 1916. University of Illinois, Agricultural Experiment Station, Circular 185; bull. no. 194, 487-495 (1917).

Johnson, Edmund.—Quick method for determining lime. Cement Eng. News 17, no. 8, 146.

Keiser, Edward H., and Forder, S. W.—New method for the determination of free lime and on so-called dead burnt lime. Acad. Sci. St. Louis, Trans., 13, 165-174 (1903).

Lenart, G.—Determination of calcium oxide in milk of lime. Z. Ver. deut. Zuckerind. 1919, 1-15; C. A. 13, 2829.

Meiklejohn, C. A.—Determination of available calcium oxide in the different classes of lime supplied to the Rand reduction works. J. Chem. Met. Soc. S. Africa 19, 85-88 (1919); Eng. Min. J. 107, 739-740 (Apr. 26, 1919); C. A. 13, 1195.

Pierce, E. G.—Newberry rapid lime determination. J. Ind. Eng. Chem. 7, 258-259 (Mar., 1915).

Testing of materials.—Bureau of Standards, Circular No. 45, 42-46. 1913.

Solvay Process Co.—Standard methods for testing limestones and lime. Solvay bull. no. 4. 1918.

Willis, L. G., and MacIntire, W. H.—Rapid method for the determination of lime as calcium sulphate. J. Ind. Eng. Chem. 9, 1114-1116 (Dec., 1917).

Wolf, R. B.—Chemical testing in sulphite pulp work. Analytical methods for lime and limestone. Paper 18, no. 1, 11-14 (1916); C. A. 10, 2402.

Young, S. E.—Note on the "popping" of lime. Trans. Am. Ceram. Soc. 15, 659-660; C. A. 8, 812.

————Testing commercial lime. Proc. Nat. Lime Mnfr. Assoc. 10, 252-257; C. A. 7, 1274.

Lime—Statistical.

Burchard, E. F.—Lime. U. S. Geological Survey, Mineral Resources, 1909, II, 543-555; 1910, II, 606-626; 1911, II, 645-718.

Canada — *Department of Mines, Mines Branch.* Production of cement, lime, clay products, stones and other structural materials in Canada. Issued yearly. Ottawa, Canada.

Lime industry in 1918.—Concrete 14, suppl. 46-47 (Apr., 1919).

Lime industry in 1919.—Concrete 16, suppl. 55-57 (Apr., 1920).

Lime production.—Concrete 15, suppl. 46-47 (Sept., 1919).

Lime production in 1916.—Concrete 10, suppl. 15-16 (Feb., 1917); Eng. Mining J. 103, 194 (Jan. 27, 1917); Eng. Record 75, 470 (Mar. 24, 1917).

Loughlin, G. F.—Lime. U. S. Geological Survey, Mineral Resources, 1914, II, 363-373; 1915, II, 245-264; 1916, II, 433-462; 1917, II, 583-613.

————Lime in 1916. J. Ind. Eng. Chem. 10, 662 (Aug., 1918).

————Lime industry in 1915. Concrete 9, suppl. 39-40 (Oct., 1916).

————Our mineral supplies. Limestone and lime. U. S. Geological Survey, bull. no. 666, pp. 107-112 (1919).

————, and Insley, H.—Lime in 1918. U. S. Geological Survey, Mineral Resources, 1918, II, 815-854.

Production of lime in 1917.—Concrete 13, suppl. 56 (Nov., 1918).

Record year in lime production, 1916.—Concrete 11, suppl. 52-53 (Dec., 1917).

Stone, Ralph H.—Lime. U. S. Geological Survey, Mineral Resources, 1912, II, 651-668.

Lime in Agriculture.

Only the more recent articles are given here. No attempt has been made to include any articles from the popular farm journals, a record of which may be found in the Agricultural Index. It is believed that the references here given will enable one to consult most of the older literature.

Abbott, John B.—Liming the soil. 1912. Indiana Agricultural Experiment Station, Circular no. 33. 16 pp.

Agee, Alva.—Right use of lime in soil improvement. New York, Orange Judd Farmer, 1919. 3 p. l., 89 pp.

Agricultural lime.—Sci. Am. Suppl. 80, 112. (Aug. 14, 1915).

Ames, J. W., and Schollenberger, C. J.—Comparison of lime requirement methods. J. Ind. Eng. Chem. 8, 243-246 (1916); C. A. 10, 1568.

————Liming and lime requirements of soils. Ohio Agricultural Experiment Station, bull. no. 306, 281-396 (1916); C. A. 10. 1568.

Andrews, W. W.—The use and abuse of lime

in agriculture. Sci. Agr., Nova Scotia, Report, 1909, 11-17; C. A. 5, 954.

Bear, F. E.—Correlation between bacterial activity and lime requirements of soils. Soil Science 4, 433-462 (Dec., 1917).

————Effect of quicklime in the organic matter in soils. J. Am. Soc. Agron. 8, 111-113 (1916); C. A. 10, 1688.

Bizzell, J. A., and Lyon, T. L.—Estimation of the lime requirements of soils. J. Ind. Eng. Chem. 5, 1011-1012; C. A. 8, 544.

Blanck, E.—Influence of lime on the movement of water in soil. Landw. Jahrb. 38, 715-758; C. A. 4, 73.

Bouyovcos, G. J.—Freezing point method as a means of determining the nature of acidity and lime requirements of soils. 1916. Michigan Agricultural Experiment Station, Technical bull. no. 27. 56 pp.

Brooks, Wm. P.—Rational use of lime. 1911. Massachusetts Agricultural Experiment Station, bull. no. 137. 19 pp. See C. A. 6, 134.

————Use of lime in Massachusetts agriculture. 1909. Massachusetts Agricultural Experiment Station, Circular 20. 6 pp.

Broughton, L. B.—How lime is distributed through and lost from soils. 1912. Maryland Agricultural Experiment Station, bull. no. 166; Annual Report, 1911-1912, 285-326; C. A. 7, 2987.

Buquo, G. C., Lime Co.—Liming for profit. Columbus, S. C., 1914. 32 pp.

Classification of lime for agricultural purposes. Proc. Nat. Lime Mnfr. Assoc., 1910, 7-8.

Coggeshall, G. W.—Potash and lime in agriculture and the arts. Proc. Nat. Lime Mnfr. Assoc. 13, 99-114 (1915).

Conner, S. D.—Determination of the value of agricultural lime. J. Ind. Eng. Chem. 10, 996-999 (Dec., 1918).

Creydt, Bodo.—Experiments on the lime sensitiveness of lupines and its control. J. Landw. 63, 125-191 (1915); C. A. 10, 1393.

Duggar, J. F., and Funchen, M. J.—Lime for Alabama soils. Alabama Polytechnic Institute, Agricultural Experiment Station, bull. no. 161. C. A. 6, 2810.

Eagle Lime Products Co.—Soil fertilization, how to supply the missing elements in worn-out soils. Milwaukee, Wis., Eagle Lime Products Co., Sept., 1911. bull. 303. 16 pp.

Ellett, Walter B.—Lime for Virginia farms. 1910. Virginia Agricultural Experiment Station, bull. no. 187. 48 pp.

Farmers' Educational and Co-operative Bureau. Lime in agriculture. 190—. 37 pp.

Fearnow, M. L.—Lime on the farm. Nat. Lime Mnfr. Assoc., Agricultural bull. no. 4. Apr., 1917. 16 pp.

————Lime on the farm. Forms of agricultural lime and their application. Nat. Lime Mnfr. Assoc., Agricultural bull. no. 3. Mar., 1917. 16 pp.

————Lime on the farm. The need of lime and how to detect it. Nat. Lime Mnfr. Assoc., Agricultural bull. no. 1. Mar., 1917. 8 pp.

Felder, E. A.—Lime in agriculture. 1917. South Carolina, Department of Agriculture, Commerce and Industry, bull. 59. 75 pp.

Fippin, Elmer O.—Relation of lime to soil improvement. Proc. Nat. Lime Mnfr. Assoc., 1910, 78-89.

————Some phases of the relation of lime to soil improvement. Proc. Nat. Lime Mnfr. Assoc., 1911, 161-170.

Fraps, G. S.—Effect of lime and carbonate of lime on acid phosphate. Texas, Agricultural Experiment Station, bull. 223.

Frear, Wm.—Sour soils and liming. 1915. Pennsylvania, Department of Agriculture, bull. 261. 221 pp.

————Use of lime upon Pennsylvania soils. 1900. Pennsylvania Department of Agriculture, bull. 61. 170 pp.

Gartner, E. W.—Effect of lime upon the solubility of soil constituents. J. Ind. Eng. Chem. 2, 315-316; C. A. 4, 2537.

Gile, Philip L.—Lime magnesia ratio as affected by concentration. 1913. Porto Rico Agricultural Experiment Station, bull. 12. 24 pp.

————, and Agelon, C. N.—Significance of the lime magnesia ratio in soils. J. Ind. Eng. Chem. 5, 33-35; C. A. 7, 855.

Graham, J. B.—Lime as a fertilizer. Rock Products 9, no. 10, 33 (Apr. 22, 1910).

Guthrie, Frederick B.—Lime on the farm. New South Wales, Department of Agriculture, Farmers' bull. no. 115. 1917. 31 pp.

Hager, G.—Conversion of quicklime in soils. J. Landw. 65, 245-311 (1917); C. A. 13, 156.

Harcourt, R.—Lime and its use in agriculture. 1916. New Brunswick, Department of Agriculture, bull. no. 33. 12 pp.

Haskins, H. D., and Merrill, J. F.—Distribution, composition and cost of lime. 1911. Massachusetts Agricultural Experiment Station, bull. no. 137.

Hills, J. L.—Commercial fertilizers. Limes and liming. Vermont Agricultural Experiment Station, bull. no. 160. C. A. 6, 2812.

Hutchinson, H. B.—A partial sterilization of the soil by means of caustic lime. J. Agr. Sci. 5, 320-330; C. A. 8, 3701.

————, and MacLennan, K.—Relative effect of lime as oxide and as carbonate in certain soils. J. Agr. Sci. 6, 302-307; C. A. 8, 3834.

————Studies on the lime requirements of soils. J. Agr. Sci. 7, 75-105 (1915); C. A. 8, 3340.

Lander, Alex., Fagan, T. W., and Steele, J. T.—Experiments with lime and waste carbonate of lime, 1913-1914. Edinburgh and East of Scotland College of Agriculture, Report 36. 1915. 10 pp.

Langenbeck, Karl. The oldest chemical fertilizer. Nat. Lime Mnfr. Assoc., Agricultural Lime bull. no. 3. May, 1914. 2 pp.

Lemmermann, O.—Action of different proportions of lime and magnesia in soils on

higher plants and micro-organisms. Landw. Jahrb. 40, 173-254; C. A. 5, 3314.

————Lime requirements of soil as determined by soil investigations and vegetation experiments. Landw. Jahrb. 40, 255-324; C. A. 5, 3314.

Loew, Oscar, and May, David W.—Relation of lime and magnesium to plant growth. I. Liming of soils from a physiological standpoint. II. Experimental study of the relation of lime and magnesia to plant growth. U. S. Department of Agriculture, Bureau of Plant Industry, bull. no. 1. 53 pp.

McCool, M. M., and Millar, C. E.—Some general information on lime and its use and function in soil. 1918. Michigan Agricultural Experiment Station, Special bull. no. 91. 21 pp. C. A. 13, 764.

MacIntire, W. H.—New method for the determination of lime requirements in soils. J. Assoc. Offic. Agr. Chem. 1, 417-418 1915); J. Ind. Eng. Chem. 7, 864-867 (1915); C. A. 10, 243.

————Results of 30 years' liming. Pennsylvania Agricultural Experiment Station, Annual Report, 1911-1912, 64-75; C. A. 10, 2118.

Massey, W. F.—Farmers' experience with lime. Proc. Nat. Lime Mnfr. Assoc. 12, 106-122 (1914).

Miller, M. F.—Influence of lime on soil bacteria. Z. Gärungs. Physiol. 4, 194-206; C. A. 8, 1443.

————The use of lime in Missouri. 1914. Missouri State Board of Agriculture, Monthly bull., Feb., 1914, 12, no. 2. 27 pp.

————, and Krusekopf, H. H.—Agricultural lime. 1917. Missouri Agricultural Experiment Station, bull. 146. 25 pp. See also bull. 171, 1920.

Morse, Fred W.—Effect on a crop of clover of liming the soil. 1915. Massachusetts Agricultural Experiment Station, bull. 161.

Moulton, C. R., and Trowbridge, P. F.—Estimation of the lime requirements of soils by means of the hydroxides of the alkaline earths. J. Ind. Eng. Chem. 6, 835-837 (Oct., 1914); C. A. 8, 3833.

Movers, Chas. A.—Liming for Tennessee's soils. Tennessee Agricultural Experiment Station, bull. no. 97. 35 pp. C. A. 7, 2644.

Neubauer, H.—Examining, sampling and guaranty of fertilizer lime. Landw. Verstaat. 85, 228-238 (1914); C. A. 10, 2268.

Ohio, *Board of Agriculture.*—Official report on agricultural lime. 1915, 1916, etc.

Pennsylvania, *Department of Agriculture, Bureau of Chemistry.*—Lime report, 1916-1918. Department of Agriculture, bull. 294, 302, 319.

————, *State College, School of Agriculture and Experiment Station.*—Use of lime on land. A few facts on lime fertilization. 1911. 7 pp.

Plummer, James B.—Availability of potaash in some common soil forming minerals. Effect of lime upon potash absorption by different crops. J. Agr. Research 14, no. 8, 297-316 (1918).

Porter, John J.—Argument for the agricultural use of lime. Proc. Nat. Lime Mnfr. Assn. 13, 53-57 (1915).

Rational use of lime.—Oregon, Agricultural Extension bull. no. 305, 1-8 (1918).

Rockland-Rockport Lime Co.—Liming of soils and spraying. A practical treatise for farmers, gardeners, and crop specialists. Rockland, Me., 1907. 31 pp.

Shorey, Edmund C.—The principles of the liming of soil. U. S. Department of Agriculture, Farmers' bull. no. 921. 30 pp. 1918.

Shutt, F. T.—Lime in agriculture. Canada, Department of Agriculture, Experimental Farms, Division of Chemistry, bull. no. 80.

Sopher, Ellis N.—Lime and fillers. Proc. Nat. Lime Mnfr. Assoc., 12, 445-458 (1914).

Stone, William M.—Cause and result, or agricultural lime, inocculated legumes and sucessful agriculture. Alliance, Ohio, 1915. 64 pp.

Sutliff, W. S.—Lime and liming for agricultural purposes. Lime Light, 1-4 (1903).

Thaer, W.—Lime and humus on soils. J. Landw. 59, 9-57, 108-139; C. A. 5, 3490.

Thomas, W., and Frear, W.—Lime magnesia ratio in soil amendments. J. Ind. Eng. Chem. 7, 1042-1044 (Dec., 1915); C. A. 10, 366.

Voelcker, J. A.—Relation of lime to magnesia in soils. J. Royal Agr. Soc., England, 76, 351-355 (1915); C. A. 10, 1903.

————Acidity of soils and lime requirements. J. Royal Agr. Soc., England, 76, 355-363 (1915); C. A. 10, 1903.

Waring, W. Geo.—Treatment of soil. Lime Light, 115-122 (1904).

Warner, Irving.—The position of lime in the chemistry of the soil. Proc. Nat. Lime Mnfr. Assoc., 1911, 94-106.

Warth, Frederick J., and Saw, M. P.—Absorption of lime by soils. India, Department of Agriculture, Memoirs, Chemical Series, 5, no. 6, 157-171 (1919).

Wheeler, Homer J.—Agricultural outlook for lime. Lime Light, 287-298 (1908).

————Agricultural use of lime. Lime Light, 34-58 (1904).

————Lime and fertilizers. Boston, 1917. 12 pp.

————Liming of soils. U. S. Department of Agriculture, Farmers' bull. 77. 2nd ed. 1905. 19 pp.

Whiston, Andrew R., and Wen, W. W.—Soil acidity and liming. Missouri Board of Agriculture, Monthly bull., 12, no. 2, Feb., 1914. 27 pp.

Wiancko, Alfred T.—Value of lime in Indiana soils. Indiana Agricultural Experiment Station, bull. no. 213. 16 pp. 1918.

Wilder, G. J.—Importance of lime in agriculture. Proc. Nat. Lime Mnfr. Assoc. 14, 90-99 (1916).

Use in Cement and Concrete.

Abrams, Duff A.—Effect of hydrated lime

and other powdered admixtures in concrete. Proc. Am. Soc. Testing Materials, 20, II, 149-203 (1920).

Ashton, E.—Experiments on the effect of hydrated lime on concrete. Eng. News, 75, 470-471 (Mar. 9, 1916).

————Tests on hydrated lime addition to concrete for road work. Eng. Contr. 45, 206-207 (Mar. 1, 1916); C. A. 11, 2397.

Beal, F. J.—Calcination of lime and clay mixture to make Portland cement. Concrete 8, 22-26; C. A. 2, 1609.

Dyckerhoff, ——, and Franin, ——.—Addition of lime to cement. Tonind. Ztg. 35, 350-352; C. A. 5, 2318.

Edwards, R. S.—Hydrated lime in concrete mixtures for pavements. Concrete Cement 4, 239-240 (May, 1914); Eng. Contr. 41, 679-680 (June 10, 1914); C. A. 8, 2470.

————Use of hydrated lime in Oregon state concrete roads. Proc. Nat. Lime Mnfr. Assoc. 13, 202-206 (1915).

Emley, W. E., and Kaczorowski, S. K.—Effect of hydrated lime on the compressive strength of concrete. Proc. Nat. Lime Mnfr. Assoc., 1917. 4 pp.

Effect of adding hydrated lime to Portland cement. Cement Eng. News, Mar., 1915, 76.

Effect of inert powders on concrete strength. —Eng. News Record 85, no. 2, 55 (July 8, 1920).

Free lime in cement.—Sci. Am. Suppl. 66, 150-151; C. A. 2, 2982.

Fuller, M. O.—How lime affects the strength of concrete mortars. Concrete 13, 83 (Sept., 1918); Am. Arch. 115, 152-153 (Jan. 22, 1919).

————Tensile strength of Portland cement mortars containing lime. Concrete 9, 89-91 (Sept., 1916).

Gardner, H.—Effect of hydrate lime on cement mortars. Eng. Record 64, 309-316; C. A. 6, 282.

Griesenann, G. J.—Hydrated lime in spouted concrete. Concrete Cement 7, 188 (Nov., 1915).

Hentschel, G.—Qualitative test for free lime in Portland cement clinker. Tonind. Ztg. 34, 34; C. A. 4, 1229.

Hough, N. G.—Hydrated lime addition to concrete for road work. Eng. Contr. 45, 225-226 (Mar. 8, 1916).

————Hydrated lime and its advantage in concrete. Cement Era, Aug., 1916, 46-47.

————Hydrated lime in spouted concrete. Concrete Cement 7, 216 (Dec., 1915).

————Mixing hydrated lime and cement at the mill. Concrete 11, 25 (July, 1917).

————Proportioning and mixing hydrated lime with concrete. Concrete 11, 85-86 (Sept., 1917).

————Use of hydrated lime in dry-tamp mixtures of concrete. Concrete 8, 228-229 (May, 1916).

Hutchinson, G. W.—Hydrated lime in concrete roads. Munic. J. 45, 230 (Sept. 21, 1918); Am. Arch. 114, 414-415 (Oct. 2, 1918); Concrete 13, 133 (Oct., 1918); Eng. Contr. 50, 329-330 (Oct. 2, 1918); Eng. Cement World 13, 28-30 (Oct. 15, 1918); C. A. 12, 2678.

Hydrated lime in concrete.—Concrete 10, 128 (Mar., 1917).

Hydrated lime in concrete pavement construction.—Eng. Contr. 46, 111 (Aug. 2, 1916).

Hydrated lime in concrete road construction.—Good Roads, n. s., 10, 305-308 (Dec. 4, 1915).

Hydrated lime in road concrete. Eng. News 73, 503 (Mar. 11, 1915).

Improving concrete by the use of hydrated lime.—Munic. Eng. 49, 211-212 (Dec., 1915).

Kiefer, H. E.—Free lime in concrete. J. Ind. Eng. Chem. 4, 358-362; C. A. 6, 1829.

Klein, A. A., and Phillips, A. J.—Magnesia in Portland cement. 8th Intern. Congr. Appl. Chem. 5, 73-81; C. A. 6, 3172.

Lambert, C. F.—Hydrated lime in concrete. Concrete 12, 224-225 (June, 1918).

Lazell, E. W.—Hydrated lime and concrete mortars. Proc. Am. Soc. Testing Materials, 8, 418 (1908).

Lime as an aid in chuting concrete.—Eng. Rec. 70, 2 (July 4, 1914).

MacGregor, J. S.—Value of hydrated lime in cement mortar. Munic. Eng. 51, 120-122 (1916); C. A. 10, 2977.

National Lime Manufacturers' Association—*Hydrated Lime Bureau.*—Improving concrete roads—Effect of hydrated lime on permeability, expansion and contraction. 1916. 20 pp.

Newberry, S. B.—How does hydrated lime add to the strength of concrete? Concrete Cement 4, 130-131 (Mar., 1914).

————Use of lime in concrete blocks. Munic. Eng., Apr., 1906.

Scofield, H. H., and Stinchfield, M. J.—Tests on the effects of hydrated lime in mortar and concrete. Proc. Am. Concrete Inst., 13, 219-233 (1917); C. A. 12, 617.

Sonntag, C. H.—Precalcined limestone in cement manufacture. Concrete Cement 3, suppl. 31; C. A. 7, 4056.

Sopher, E.—Hydrate as an addition to concrete. Proc. Nat. Lime Mnfr. Assoc., 1915.

————Use of hydrated lime in concrete block manufacture. Concrete Cement 5, 218 (Nov., 1914).

Spackman, H. S.—Effect of hydrated lime on the change in volume and strength of mortars and concrete. Concrete Cement 4, 112-116 (Mar., 1914); Proc. Nat. Lime Mnfr. Assoc. 12, 160-183 (1914).

————Effect of hydrated lime on Portland cement mortars. Eng. Rec. 69, 25-26 (Jan. 3, 1914).

————Relation of the lime content of cement to durability of concrete. Concrete 11, 52-53; Shop Notes Quarterly II, 557-558; C. A. 5, 3505, 3617.

Thompson, Sanford E.—Permeability tests

of concrete with the addition of hydrated lime. Proc. Am. Soc. Testing Materials, 8, 500-513 (1908).

Trachter, H.—Evaluation of the lime content in cement. Tonind. Ztg. 33, 1334; C. A. 4, 94.

Use of hydrated lime for masonry dam.—Eng. Rec. 67, 659 (June 14, 1913).

Use of hydrated lime in concrete pavements.—Proc. Nat. Lime Mnfr. Assoc. 12, 399-410 (1914).

Use of lime hydrate in factory made concrete units. Concrete Cement 7, 186-187 (Nov., 1915).

Warner, Charles.—Perfecting concrete roads—part that hydrated lime plays in assuring absolute permanency to concrete. Cement Eng. News, Sept. 1915, 198-200.

White, A. H.—Free lime in Portland cement. J. Ind. Eng. Chem. 1, 5-11; C. A. 3, 1580.

Wiedmann, H. E.—Use of hydrated lime in concrete. J. Eng. Club St. Louis, 1, 161-173 (1916); C. A. 11, 392.

Lime in Ceramics.

Ashley, H. E.—Addition of lime to an earthenware body. Trans. Am. Ceram. Soc. 9, 147-154; C. A. 1, 346.

————Requirements of pottery materials. Trans. Am. Ceram. Soc. 12, 445 (1910).

Bleininger, A. V.—Function of lime in clays. Clay Worker 54, 156-158; C. A. 4, 2988.

Davis, N. B.—Effect of lime on certain cracking clays. Trans. Am. Ceram. Soc. 17, 497-504 (1915); C. A. 10, 674.

Eliminating lime from clay.—Tonind. Ztg. 36, 1347-1348; C. A. 7, 688.

Hope, H.—Comparative effects of lime, etc., on some china bodies. Trans. Am. Ceram. Soc. 11, 494 (1909).

Lime in clays.—Brit. Clayworker 22, 252-253; C. A. 8, 801.

Moeller, ——.—Rendering lime in clay harmless. Tonind. Ztg. 32, 506-511; C. A. 2, 2134.

Teetor, Paul.—Effect of the addition of lime and silica to a shale. Trans. Am. Ceram. Soc. 16, 201-208; C. A. 6, 3710.

Lime in the Cyanide Process.

Bruhl, P. T.—Lime as a settling agent. Eng. Min. J. 107, 1089-1090 (June 21, 1919); C. A. 13, 1801.

Meade, R. K.—Hydrated lime for cyaniding. Eng. Min. J. 98, 52-53 (July 11, 1914); C. A. 8, 2995.

Merton, A. M.—Use of lime in cyaniding. Mining Sci. 68, 154-158; Mining Eng. World 40, 58; C. A. 8, 893.

Lime in the Leather Industry.

The standard books on tanning, such as Proctor's should be consulted.

Griffith, R. W.—The use of lime in tanneries. Rock Products, Sept. 22, 1911, 36.

Roenitz, L. T.—Lime and its properties. J. Am. Leather Chemists' Assoc. 7, 165-170; C. A. 6, 1384.

Wood, J. T., and Law, D. J.—Note on the action of lime in the unhairing process. J. Soc. Chem. Ind. 35, 585-586 (1916); C. A. 10, 2051.

Lime Mortars.

Ashley, Harrison E.—Spreading and setting properties of lime mortars. Proc. Nat. Lime Mnfr. Assoc. 1910, 43-48.

Burchartz, H.—Influence of permeability of brick materials upon the hardness of lime mortar. Tonind. Ztg. 35, 290-294; C. A. 5, 2319.

Dibdin, J.—Strength of lime mortars. Eng. Rec. 55, 161-162; C. A. 1, 899.

Emley, W. E.—Crushing strength of lime mortars. Proc. Nat. Lime Mnfr. Assoc., 1913, —.

————Effect of consistency and amount of sand on the properties of lime mortars. Trans. Am. Ceram. Soc. 16, — (1914).

————Hydrated lime in a Portland cement mortar. Proc. Nat. Lime Mnfr. Assoc., 1914, —.

————Properties of cement lime sand mortars. Proc. Am. Soc. Testing Materials, 17, 262-272 (1917).

————, and Young, S. E.—The strength of lime mortar. Proc. Am. Soc. Testing Materials 14, 339-358 (1914); Eng. News 72, 157; C. A. 8, 3107; 9, 1381.

Kühl, H.—New ingredient for mortar. Tonind. Ztg. 42, 17, 37, 55 (1918); C. A. 13, 1007.

Lazell, E. W.—Comparative tests of lime mortars. Proc. Am. Soc. Testing Materials 10, 328-340 (1910); Rock Products 10, no. 3, 48-51 (Sept. 22, 1910).

————Tests of some cement lime mortars. Proc. Nat. Lime Mnfr. Assoc. 1911, 221-241.

Michaelis, W.—Lime mortars. Chem.-Ztg. 32, 380; C. A. 2, 2139.

Lime in Metallurgy.

Backheuer, M.—Influence of badly burned lime in the basic steel process. Stahl u. Eisen 38, 748-750 (1918); C. A. 13, 950.

Hendrick, J.—The lime in basic slag. J. Soc. Chem. Ind. 28, 775-778; 30, 520-522; C. A. 3, 2603; 5, 2475.

Morison, C. G. T.—Amount of free lime and the composition of the soluble phosphate in basic slag. J. Agr. Sci. 3, 161-170; C. A. 4, 231.

Prost, Eng.—Influence of lime on the sulphur content of roasted blendes. Bull. soc. chim. Belg. 25, 103-115; C. A. 5, 2389.

Yaneshe, B.—Deoxidation and the influence of lime on equilibria in the acid open hearth furnace. J. Iron Steel Inst. 1919, 16 pp.; Foundry 47, 373-376, 384 (1919); C. A. 13, 1696; Chem. Met. Eng. 21, 43-44 (July 1, 1919); Iron Age 104, 230 (July 24, 1919).

Lime in Paper Mills.

Reference should be made to the standard works on Papermaking.

Lime Plasters.

Capon, Thomas W.—Recent improvements

in the treatment of lime. Lime Light, 113-115 (1904).
Development of alca lime.—Proc. Nat. Lime Mnfr. Assoc. 12, 478-487 (1914).
Expanding grains in lime plasters.—Tonind. Ztg. 36, 1217; C. A. 6, 3174.
Hay, William C.—How lime can be re-established in the plaster field. Proc. Nat. Lime Mnfr. Assoc. 14, 135-146 (1916).
Spackman, H. S.—Possible effect of alfa lime, plasters and cements on the future of the lime trade. Rock Products 10 no. 8, 37-38; C. A. 5, 1503; Proc. Nat. Lime Mnfr. Assoc., 1911, 6-12.
Standard specifications for hydrated lime plasters.—Hydrates Lime Bureau, pamphlet E. 1915.

Sand Lime Brick.

Ackerlund, C. A.—Sand lime brick. Rock Products 10, 37. (1907).
Butts, Charles.—Sand lime brick making near Birmingham, Alabama. U. S. Geological Survey, bull. no. 315, pp. 256-258 (1907).
Cox, A. J., Reibling, W. O., and Reyes, F. D. —Sandlime brick and artificial sand stones in the Philippines. Philipp. J. Sci. 7A, 317-356; C. A. 7, 1963.
Duerr, H.—Manufacture of sand lime brick, as referred to its use of lime. Lime Light 220-223 (1908).
————Specifications for lime for use in sand lime brick manufacture. Rock Products 7, 47; C. A. 2, 2147.
Emley, W. E.—Manufacture and properties of sand lime bricks. 1917. U. S. Bureau of Standards, Technologic Paper no. 85.
Freezing tests on clay and sand lime brick. —Tonind. Ztg. 32, 1800-1807; C. A. 3, 238.
Glasenapp, M.—Making a colored surface on sand lime brick. Tonind. Ztg. 32, 1421-1423; C. A. 3, 238.
Knudson, Gustav.—Properties of Swedish sand lime brick. Tonind. Ztg. 35, 1323; C. A. 6, 283.
Koshmann, B.—Hydraulic lime for sand lime brick. Tonind. Ztg. 36, 1281-1283; C. A. 6, 3174.
————Lime for sand lime brick. Tonind. Ztg. 38, 543; C. A. 8, 2234.
Krieger, B.—Hydraulic lime for sand lime brick. Tonind. Ztg. 36, 773-775; C. A. 7, 1963.
Lime in bricks.—British Clayworker 22, 197-198.
Middleton, J.—Sand lime brick. U. S. Geological Survey, Mineral Resources, 1918, II, 5-6.
Peppel, S. V.—Sand lime brick. Ohio Geological Survey, bull. 5. 1906.
Sand lime brick.—U. S. Geological Survey, Mineral Resources 1912, II, 669-673.
Seger, H., and Cramer, E.—Lime for sand lime brick. Tonind. Ztg. 35, 249-250; C. A. 5, 2319.
Structural merits of sand lime stone.—Paper 2, no. 7, 26-27 (Feb. 1, 1911).

Lime in the Sugar Factory.

Fouquet, G.—Note on the liming and saturation of diffusion juices. Bull. assoc. chim. sucr. dist. 29, 52-62; C. A. 6, 1236.
Hudek, J.—Clarification of beet juice with one per cent. lime. Z. Zuckerind. Böhmen, 31, 360-361; C. A. 1, 1631.
Owen, W. L.—Value of lime as a sugar factory germicide. Sugar 17, no. 7, 29-31 (1915); C. A. 9, 2991.
Pellet, H.—Action of lime upon raw beet juices. Bull. assoc. chim. sucr. dist. 27, 354-357; C. A. 4, 125.
Saillard, E.—Lime production in the sugar factory. Arch Suikerind. 21, 1519-1530; C. A. 8, 1027.
————Manufacture of lime. Sucr. Belg. 41, 41-44, 88-92, 111-116; C. A. 7, 1088.

Lime in Water Purification.

Bartow, E., and Scholl, C.—Comparative value of a calcium lime and a magnesium lime for water softening. J. Ind. Eng. Chem. 6, 189-191 (Mar. 1914).
Brown, C. Arthur.—Possibilities of lime in water filtration. Lime Light, 150-154 (1906).
Excess lime method of water purification.— Engineer 120, 128 (Aug. 6, 1915).
Girvan, A. F.—Excess lime method of water sterilization. Engr. Contr. 53, 762 (June 30, 1920).
Hoover, C. P.—Lime sterilization of water. Eng. Record 68, 257-259 (Sept. 6, 1913).
————Methods and equipment for applying lime to water at the Columbus water purification works. Eng. News 72, 682-684 (Oct. 1, 1914).
————Recovery of spent lime at the Columbus water softening and purification plant. Am. Water Works Assoc. J. 3, 889-896 (Dec., 1916).
————, and Scott, R. D.—Use of lime in water purification. Eng. News 72, 586-590 (Sept. 17, 1914).
Iron lime process of water purification.— Eng. Record, Oct. 9, 1909, 403-404.
Mehring, C. A.—Lime barium softener for treatment of boiler feed water. Chem. Met. Eng. 21, 629-632 (Nov. 12, 1919).
Monfort, W. F.—Purchase of lime for water purification. Can. Engineer, Jan. 2, 1913, 111.
Smith, Alfred E.—Ilkeston and Heanor water softening plant and the utilization of refuse lime. Surveyor 53, 238-240 (1918); C. A. 13, 353.
Sperry, W. A.—Lime softening of water and the use of sludge as an aid. Am. Water Works Assoc. J. 6, 215-227, 228-229 (June, 1919); Eng. Contr. 51, 364-365 (Apr. 9, 1919).
Wall, Edward E.—Use of lime for water purification at St. Louis. Lime Light, 330-337 (1909).

Miscellaneous Uses of Lime.

Behavior of lime in an old pier.—Cement Age 10, 194; C. A. 4, 1357.

Bird, J.—The role of iron and calcium oxides used as binders in silica brick. Compt. rend. 166, 776-778 (1918); C. A. 12, 1694.

Dorset, M.—Some common disinfectants. U. S. Department of Agriculture, Farmers' bull. 926. 1918. C. A. 12, 1326.

Gardner, Henry A.—Lime for the varnish industry. Education Bureau, Paint Manufacturers' Association of the U. S., Circular no. 113. Jan., 1921.

Holgate, T.—Effect of lime in the distillation of coal. Gas World 60, 90-91; C. A. 8, 1196.

Kratz, G. D., and Flower, A. H.—Effect of certain accelerators upon the properties of vulcanized rubber. Chem. Met. Eng. 20, 417-420 (1919); C. A. 13, 1266.

Meigs, M.—Lime as a protection for steel. Power 47, 483 (Apr. 2, 1918).

————Using lime to prevent rust. Concrete 10, 174 (May, 1917).

Metcalf, Z. P.—Lime as an insecticide. J. Econ. Entomology 10, 74-78 (1917); C. A. 12, 599.

Nelson, G.—Quicklime for removing foundations. Elec. Rev. 73, 626-627 (Oct. 19, 1918).

White, Alfred H.—The use of lime in stucco. Proc. Nat. Lime Mnfr. Assoc. 14, 109-129 (1916).

Lime Sulphur.

Auld, S. J. M.—Reaction between calcium hydroxide and sulphur in aquaceous solution. J. Chem. Soc. 107, 480-495 (Apr., 1915).

Averitt, S. D.—Separation and estimation of polysulphide and thiosulphate in lime sulphur solution. J. Ind. Eng. Chem. 8, 623-627 (June, 1917).

Avery, Samuel.—Determination of lime and sulphur in solutions of sulphides, polysulphides used as insecticides. Bureau of Chemistry, bull. 90, pp. 104-105. 1905.

Blumenthal, P. L., and Averitt, S. D.—Estimation of thiosulphate sulphur in lime sulphur solutions by iodine titration. J. Am. Chem. Soc. 38, 1701-1704 (Sept., 1916).

Britton, Wilton E.—Tests of lime suphur washes in Connecticut in 1905. Bureau of Entomology, bull. 60, p. 136-137 (1906).

Chapin, Robert M.—Chemical composition of lime sulphur animal dips. U. S. Department Agriculture, bull. 451. 16 pp. 1916.

————Field tests for lime sulphur dipping baths. U. S. Department Agriculture, bull. 163. 7 pp. 1915.

————New method for the analysis of lime sulphur solution. J. Ind. Eng. Chem. 8, 151-156, 339-341 (Feb., Apr., 1916).

Felt, E. P.—Experiments with lime sulphur washes. Bureau of Entomology, bull. 52 (n. s.), pp. 25-28 (1905).

Haywood, John K.—The lime sulphur salt wash and its substitute. Bureau of Chemistry, bull. 101, 29 pp. 1907. C. A. 1, 1308.

————Study of the lime sulphur salt soda wash. Bureau of Chemistry, bull. 99, pp. 35-39 (1906).

————and Smith, C. M.—Method for preparing a commercial grade of calcium arsenate. U. S. Department of Agriculture, bull. 750, 10 pp. 1918.

Marlatt, Charles L.—The lime sulphur and salt wash. Division Entomology, Circular 52, 2nd ed. 1904. 8 p.

Morse, Warren J.—The preparation and use of lime sulphur in orchard spraying. Massachusetts Agriculture Experimental Station, Misc. Pub. 468. 10 p. 1913.

Munn, M. T.—Lime sulphur and Bordeaux mixture as a spray for potatoes. New York State Agriculture Experimental Station, bull. 421, pp. 311-317 (1916); Annual Repart, 1916, 206-212. 1917.

O'Garra, P. J.—Lime sulphur, its use as a fungicide and an insecticide. Medford, Ore. 1911. 31 pp.

Quaintance, A. L.—Lime sulphur washes for the San Jose scale. U. S. Department of Agriculture Yearbook, 1906, pp. 429-446 (1907).

Ramsay, A. A.—Lime sulphur sprays, their composition and analysis. J. Agr. Sci. 6, 476-483 (1915); C. A. 9, 838. New South Wales, Department of Agricultural Science, bull. 13, 19 pp. 1915.

Roark, R. C.—Comparison of the iodine titration and zinc chloride methods for the analysis of lime sulphur solutions. J. Assoc. Official Agr. Chem. 1, no. 1, 76-94 (May, 1915).

Scott, E. W.—Home made lime sulphur concentrate. U. S. Department of Agriculture, bull. 197. 6 p. 1915.

————and Siegler, E. H.—Lime sulphur as a stomach poison for insects. Bureau of Entomology, bull. 116, part IV, pp. 81-90 (1913).

Scott, W. M.—Lime sulphur mixtures for the summer spraying of orchards. Bureau of Plant Industry, circular 27. 17 pp. 1909.

————Self boiled lime sulphur mixture as a promising fungicide. Bureau of Plant Industry, circular 1. 18 pp. 1908.

————Substitution of lime sulphur preparation for Bordeaux mixture in the treatment of apple disease. Bureau of Plant Industry, circular 54. 15 pp. 1910.

————Use of dilute lime sulphur solution for the control of apple disease. Illinois State Horticultural Soc., Urbana, Ill., Feb. 9, 1911. 8 p.

————Use of lime sulphur sprays in the summer spraying of Virginia apple orchards. Virginia Agriculture Experimental Station, bull. 188. 16 pp. 1910.

Starcher, G. C.—Preparation of concentrated lime sulphur on the farm. Virginia Agriculture Experimental Station, bull. 201. 16 pp. 1913.

Stewart, J. P.—Preparation and use of concentrated lime sulphur. Pennsylvania chards. Virginia Agricultural Experiment Station, bull. 188. 16 pp. 1910.

————Sulphur arsenical spray injury and its prevention, Hartford, Conn., 1912.

Stone, G. E.—Lime and sulphur solution. Massuchusetts Agriculture Experimental Station, circular 31. Apr. 1911. 4 p. Revised as circular 39. 1914. 4 p.

Tartar, H. V.—Theoretical basis for the proportion of lime and sulphur used in the commercial preparation of the lime sulphur spray. J. Ind. Eng. Chem. 6, 488-489 (June, 1914).

————Valuation of lime sulphur as an insecticide. J. Ind. Eng. Chem. 6, 313-315 (Apr., 1914).

Thatcher, R. V.—Reaction between lime and sulphur. J. Am. Chem. Soc. 30, 63-68; C. A. 2, 963.

Van Slyke, L. L.—Chemical study of the lime sulphur wash. New York Agriculture Experimental Station, bull. 319, pp. 383-418. 1909.

Winter, O. B.—Contribution to the composition of lime sulphur solutions. J. Ind. Eng. Chem. 10, 539-545 (July, 1918).

Withrow, J. R.—Effect of lime sulphur spray manufacture on the eye-sight. Ohio State University, bull. 17, no. 5. 7 pp. J. Ind. Eng. Chem. 4, no. 10 (Oct., 1912).

Bureau of Business Research, Harvard University, has issued a 108-page Labor Terminology. It is Bulletin 25, dated March, 1921. It is a perfunctory compilation, which we hope will be subjected to periodical revision. In this way the present effort might be developed into a sort of labor manual, which would be a very useful thing indeed. A cursory examination only discloses the omission of definitions for compensatory time, absenteeism, rustling card, margin (profit is given).

"Hope" is the inspiring name of a new monthly house magazine, a publication for jewelers, edited and published by L. Heller & Son, Inc., 68 Nassau St., New York City.

Roure-Bertrand fils, Grasse, France, issue a "Scientific and Industrial Bulletin." It is a valuable contribution to the study of essential oils. Grasse is the center of the French perfume industry. Series 4, No. 2, October, 1920, of the Bulletin has just come to hand. The industrial part of the Bulletins contains ample notes on cost of production of essential oils, on the flower harvests of the south of France, etc. There is also a bibliography of recent publications on perfumes and essential oils.

The Trademarking Manual, 48 pages, is distributed gratuitously by the Kaumagraph Co., 209 W. 38th St., New York City. Useful information concerning registration, cost of designing and the making of trade-marks is contained in the pamphlet.

This manual is timely owing to the recent passage of a new trade-mark law in 1920.

Before the passage of this law there were trade-marks in use which could not be registered under the act in force of February 20, 1905.

The Jewelers' Research Bureau, 437 South Broadway, Los Angeles, Cal., has issued a "Complete Manual of Operating Accounts," especially designed for retail jewelers. The issuing bureau is the research bureau of the American National Retail Jewelers' Association. The manual is priced at $5.00.

The new edition of the "Annuaire Desechaliers," 3 Rue de Castellane, Paris, forms a ready reference to all classes of supply in the paper, printing and kindred trades. It gives a list of printers in Paris.

The Griscom Russell Co., 90 West st., New York City, has recently published a 29-page illustrated booklet entitled "The Cooling of Quenching Oil in the Heat Treatment of Steel," by Kenneth B. Millett. In a readable manner the necessity for heat treatment, the various quenching mediums and systems commonly used are described.

Charles Griffin & Co., Ltd., 12 Exeter st., Strand, London, is a famous publishing house. In commemoration of its centenary it has issued a handsomely produced cloth bound gold blocked volume. A foreword by the Rt. Hon. Lord Moulton suitably introduces special articles by well-known writers in scientific and technical circles, each treating of his own particular subject, not only in the light of its literature, but giving a résumé of latter-day progress and present conditions.

The National Labour Press, England, Leicester branch, has issued an advertising booklet which is quite out of the ordinary. It comprises a record of the National Labour Press, which began in Manchester in a small way in 1909; in 1918 it had founded three branches. In 1909 £6000 of printing was turned out, the estimated turnover for 1920 is well over £100,000.

Sinclair & Valentine Ink Co., New York City, have issued a handy little handbook of some 400 odd pages treating of printing inks, their history, composition and manufacture, written by Francis L. Burt.

An unusually interesting booklet is issued by the Pictorial Machinery Ltd., 7 Farringdon road, London, E. C. 1, entitled: "Lithotex Process and Plant as applied to the Graphic Arts." The booklet enters into a description and details of the method of the Lithotex process, which is well worth wide circulation.

Directory of the Stationery Trade for Buyers. (The American Stationer and Office Outfitter, March 19, 1921.) This is the annual buyers' number. In it will be found a complete classification of goods marketed in the stationery and office outfitting trade, together with the sources from which these goods may be obtained.

Government Services

CONDUCTED BY CHARLOTTE CARMODY,

Library, U. S. Department of Commerce.

This Department will hereafter be a standing feature of SPECIAL LIBRARIES. The Government issues a large number of current services. Special librarians will find them of great value. Many of them are not listed in the Monthly Catalog, for the reason that eventually the information they convey may be issued in permanent form in Bulletins, etc., which are listed. Out of the war's turmoil, with its terrific impact, sucking information from all available sources, there came into existence a series of statistical commodity services. These, supplementing some of earlier date, constitute a considerable body of current economic and commercial data.

ABBREVIATIONS

bal. = balance
comp. = compiled
cons. = consumer, -sumption, -suming
cor. = corresponding
cur. = current
est. = estimated
exp. = exports
imp. = imports
Mo., mo. = monthly
prec. = preceding
prev. = previous
prod. = producer, -duction
Q., q. = quarterly
repts. = reports

COTTON GINNING.

Preliminary report of cotton ginned. Monthly during crop yr. Postal. (Bureau of Census.)

History of Service:

The collection of this data was inaugurated in 1901, as Census Bulletins 58, 98 and 206, 12th census, for the crop years 1899, 1900 and 1901, under Mr. S. N. D. North, then chief statistician of the Division of Manufactures of the Census Bureau. (See ann. rept. Dept. Interior, 1901 Misc. repts., pt. 1: 333.) The service this year was tentative, but met with so much approval from producers, cotton exchanges, factors and manufacturers that Mr. North was led to recommend legislation to put the service on a permanent basis. Section 9 of the Act of March 6, 1902, authorizes the Director of the Census to collect annually the statistics of cotton production as returned by the ginners, and to publish bulletins weekly beginning Sept. 1, giving the results (C., 1902; 243). It was not found practicable to publish weekly bulletins.

Scope of Service:

Cotton ginned (excl. of linters) crops of cur. and two prec. yrs.; running bales (counting round as half bales) do.; av. gross wt. (lbs.) cur. yr; equivalent 500 lb. bales cur. and two prec. yrs.; ginneries operated for crop of cur. and prec. yr. Totals for U. S.: Ala., Ariz., Ark., Calif., Fla., Ga., La., Miss., Mo., No. Car., Okla., So. Car., Tenn., Tex., Va., and all other states. Cons., stocks, imp. and exp.—U. S., for cur. mo. World statistics, prod., cons., active and idle spindles for prec. crop year.

MARKETING.

State and federal marketing activities. Wkly. (U. S. Bureau of Markets.)

History of Service:

Inaugurated March 14, 1921.

Scope of Service:

Cur. information relating to agricultural marketing activities, gathered cooperatively by state and federal officials, and issued wkly. for their assistance and use.

PAPER INDUSTRY.

Statistical summary of the paper industry. Mo. (U. S. Federal Trade Commission.)

History of Service:

Inaugurated in Oct., 1918.

Scope of Service:

Tabulated summary of prod., shipments and stocks of paper mills in the U. S. for the cur. mo., compared with the cor. mo. of prev. three yrs.; av. prod. and stocks based upon prod. and stocks for three prev. yrs. Classification of mills into ten groups according to grades of paper made. Ratio of stocks to av. prod. Imp. and exp. of all grades of paper for last available mo. compared with cor. mo. prev. yr. Loss of prod.: Idle machine time shown by grades. Time lost in cur. mo. given by grades and reasons.

TOBACCO.

Leaf tobaco held by manufacturers and dealers. Q. (Bureau of the Census.)

History of Service:

On April 30, 1912, Congress passed an act providing for the collection as of Oct. 1 and April 1, each year, of statistics of the stocks of leaf tobacco held by manufacturers and dealers. Eight reports had been made semi-annually on April 1, 1916. Thereafter and up to date these reports have been made quarterly.

Scope of Service:

Lbs. of leaf tobacco on hand, chewing, smoking, snuff and exp. types (12), cigar types (11) and imp. types.

(Continued on page 93)

Special Libraries

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EDITORIALS

SWAMPSCOTT 1921 SWAMPSCOTT

HOOVER ON THE SPECIAL LIBRARY

On the first page of this issue we are publishing an important statement by the Hon. Herbert Hoover, Secretary of Commerce, in which he points out the immense value of the service rendered to American science and industry by the special library. We hope that every member will give wide publicity to this statement. Mr. Hoover was invited to address the members of the Special Libraries Association at Swampscott but pressure of official duties made his acceptance impossible. In lieu of his presence the statement made by Mr. Hoover is published as an illustration of his appreciation of the ideas for which the Association stands.

COLLECTIVE CO-OPERATION

The response to our editorial comment under this caption, in the February issue of SPECIAL LIBRARIES, has been most gratifying. It has led us to feel that subscribers regard SPECIAL LIBRARIES not merely as a magazine, but as their magazine. Among the suggestions that have come in are the following:

The statement is frequently made that trade journals are of great value to the special librarian. If that is true why not give special librarians the benefit of that value? We suggest that all the nuggets in the trade journals be gathered up and sold to consumers by SPECIAL LIBRARIES through the special librarian. These nuggets are tables, tests, analyses, formulae, etc.

The editor appreciates the value of this information and, considering the high source from which the suggestion comes, is giving serious thought to the installation of a department covering this requirement.

The special librarian of a small but active industrial library writes: "Can SPECIAL LIBRARIES not do something to help libraries like mine to get the best use out of public documents? Their alleged value has been dinged into us at school, in lectures, etc., but, I must confess, I have yet to learn concretely just wherein this value lies."

SWAMPSCOTT 1921 SWAMPSCOTT

Sister, listen. Public documents are like food. What is good for one, disagrees with another. In a general way, because this is a subject about which the Editor knows very little, in a general way, by securing experienced co-operation, SPECIAL LIBRARIES can help the special librarian in your position. Not only can, but is going to do it. There is being issued daily from the various Government bureaus, commissions and departments a large amount of commercial information in temporary form. This information may distinctly be regarded in the same way as are the recognized commercial services. Much of the information mailed out each day by the Government ultimately finds its way into the final reports. But the special librarian as a rule requires information fresh.

The Editor is therefore pleased to announce that, beginning with the current issue, SPECIAL LIBRARIES will carry in each issue a Government Services Department. This department will be conducted by Miss Charlotte Carmody, of the Library of the Department of Commerce.

ASSOCIATION ACTIVITIES

DRAFT OF PROGRAM FOR TWELFTH ANNUAL CONVENTION OF S. L. A.

(Swampscott, Mass., June 20-25, 1921.)

The program will include three general sessions, three group meetings, and one joint session with the American Library Association. The special meeting to discuss the work of local special library associations will take place during the first half of the third group meeting. There will be no separate meetings of different business groups; the Financial group, the Street Railway group, the Government Libraries group, and others will discuss their problems together at the three group meetings.

Tuesday, June 21. First General Session in the afternoon devoted to the general subject: "How Business and Technical Executives Obtain Information," which will be taken up immediately after a short business session. The speakers:

Dr. Edwin E. Slosson, Editor Science Service, National Research Council.

Mr. Leroy D. Peavey, Vice-President, Babson Statistical Organiaztion, Wellesley Hills, Mass.

Mr. Daniel N. Handy, Librarian, Insurance Library of Boston, Boston, Mass.

The First Group Meeting, in the evening, will have for general topic: "Obtaining Information for the Special Library" and will be given over to five-minute talks and round-table discussion of ways and means to discover specialized sources and the salvaging of special library data therefrom.

Group Chairman: Mr. Lewis A. Armistead.

Discussion Leaders: Miss E. L. Baechtold, A. C. Mitchell, J. B. Carson, A. R. Hasse, M. A. Carabin, H. E. Hemphill and Mr. E. H. Redstone.

Wednesday, June 22. Second General Session will be held in the morning, with three or four speakers, and will treat the subject: "The Practical Value of Special Library Information." The speakers:

Mr. Frederick L. Hoffman, Third Vice-President and Statistician, Prudential Insurance Company of America.

Mr. Charles C. Parlin, Research Manager, Curtis Publishing Co., Philadelphia.

The Second Group Meeting, in the afternoon, will be devoted to ways and means of "Organizing Special Library Data," covering Filing, Classification Systems, Research Methods, Office Forms, etc.

Group Chairman: Mr. George Winthrop Lee.

Discussion Leaders: Miss H. M. Rankin, M. Burnett, Louise Keller, M. C. Wells, E. L. Liebmann, Mr. W. D. Heydecker and Mr. Guy Marion.

Thursday, June 23. Members will visit local points of interest, no regular sessions being set.

Friday, June 24. The A. L. A.-S. L. A. Joint Session will be held in the morning and the general subject will be: "Co-operation Between Public and Special Libraries." The Presidents of the two associations will preside and the speakers will be:

Mr. Charles F. D. Belden, Librarian, Public Library of Boston, Mass.

Miss June R. Donnelly, Director, Simmons College Library School.

Mr. Joseph L. Wheeler, Librarian, Youngstown Public Library.

Third General Session, in afternoon, the general subject being: "Business and Technical Information via the Special Library." The speakers:

Mr. F. E. Barrows, Pennie, Davis Marvin and Edmonds, New York City.
Mr. J. George Frederick, President The Business Bourse, New York City.
Mrs. Jeanne B. Foster, Librarian, Kuhn, Loeb and Co., New York City.

Third Group Meeting, Friday evening. First half: subject: "Organizing the Community's Special Library Service." Speakers:

Miss Rebecca B. Rankin, President, New York Special Libraries Association.
Mrs. Bertha V. Hartzell, President, Boston Special Libraries Association.
Miss H. M. Rankin, Secretary-Treasurer, Special Libraries Council of Philadelphia, Pennsylvania.
Miss Alta B. Claflin, President, Cleveland Club of Special Librarians.

The second half of the meeting, continuing the plan of previous group meetings, will be devoted to the subject: "Selling Special Library Service." The meeting will be in charge of:

Group Chairman: O. Louise Evans.
Discussion Leaders: Miss E. M. Taylor, M. Reynolds, M. L. Alexander, Ethel Cleland, E. R. Oberly, L. R. Gibbs, Alice Rose and Mr. J. H. Friedel, R. L. Power.

BOSTON S. L. A.

Through the courtesy of Mr. George Winthrop Lee SPECIAL LIBRARIES has recently received a copy of an extremely interesting "Union List of Periodicals and Annuals taken by Eleven Special Libraries in Boston" (March, 1921), published by the Special Libraries Association of Boston, and we hasten to express cordial congratulations to the Special Libraries of Boston upon this constructive and valuable contribution to the literature of our profession.

The report is in the form of a sixteen-page pamphlet printed on high grade paper, each page of generous size. According to an introductory note the Union List "is intended primarily for the use of the special librarians of Boston for the purpose of supplementing the resources of their libraries with additional or allied material to be found in eleven representative libraries, covering activities in the following fields: Arts and sciences, banking, engineering in all its aspects, insurance, law, social service and literature." Copies of the List may be obtained from Miss Leslie R. French, Secretary of the Boston Association, who is Librarian of the Aberthaw Construction Company, 27 School Street, Boston, Mass., at 50 cents.

The Special Libraries Association of Boston, and its President, Mrs. Bertha V. Hartzell (Librarian, Special Service Library, 18 Somerset Street), have set a new mark in local special library association performance for which all credit is due. SPECIAL LIBRARIES will watch with interest for similar manifestations on the part of other regional associations of special librarians.

NEW YORK S. L. A.

The New York Special Library Association had its monthly meeting on Friday, April 22. It was a dinner meeting called for 5:30. Nearly two hundred were present. After dinner addresses were made by President F. H. La Guardia of the Board of Aldermen, Mr. Rattrey of the Guaranty Trust Co., Mr. Robert F. Barbour of the Insurance Society of New York and Mr. H. V. Coes of the engineering staff of Ford, Bacon and Davis.

President La Guardia was happy in his tributes to the service of the Municipal Reference Library to city officials. Mr. Rattrey said that in a sense a library is the backbone of the commercial world and outlined the place of the librarian as an aid to the public man. Mr. Barbour said that the dreamers of the world were the real doers, they are the vanguard of the practical man. The purpose and scope of an ideal insurance library formed the burden of Mr. Barbour's address. Mr. Coes impressed upon those present that modern business is so complex, the outlook so world wide and business conditions shifting so rapidly, that it is impossible to conduct business to-day without up-to-date authentic information. Mr. Coes said he would take the opportunity offered him to suggest consideration of ways and means to perfect the exchange of information. The appointment of a committee to study the feasibility of a clearing house of information, was put forward. Mr. Coes said the problem of supplying information was largely a marketing problem, and urged upon his hearers an appreciation of the national import of information as a marketable commodity.

SPECIAL LIBRARY FIELD DOINGS

"Extension Development in Business Education" is the title of an article by Prof. Ralph L. Power, of William and Mary, and second vice-president of Special Libraries Association, in the Journal of Education, March 10, 1921.

Charles F. Ebel, of Faribault, Minn., has been appointed by the Governor as state librarian, to succeed E. J. Lien.

"The Annual Report of the Inspector of Buildings of the City of Milwaukee, Wis. for the Year Ending December 31, 1920". Such

is the title, the stereotyped title of the customary city report. This one is no different. Between the covers of this report, however, are tucked away unexpected morceaux, glinting alienly among dry tabulations. One of these is a causerie on interior decoration by Miss Margaret Reynolds, librarian of the First Wisconsin National Bank, under a caption taken from Burns.

Marilla Waite Freeman, librarian of Goodwyn Institute Library, Memphis, Tennessee, will complete in July the two year course of the University of Memphis Law School. The fact that this excellent school holds its evening classes in Goodwyn Institute building has made it feasible for Miss Freeman to combine the night law course with her responsibilities as librarian of the Institute. Miss Freeman's earlier degree from the University of Chicago qualified her for admission to the Law School. The addition of this new branch of knowledge will enrich her already wide training and experience as a special reference and research librarian and library organizer.

Goodwyn Institute Library, of which Miss Freeman has been in charge for several years, is one of the two special features of an institution of unique interest. The other is the remarkable course of free public lectures which Goodwyn Institute furnishes to the Memphis public from October to May of each year. It brings to that city distinguished speakers of this and other countries. Eight countries other than America are represented upon the Institute list of lectures for the current year.

The practical wisdom of the founder, William A. Goodwyn, was shown in the location of Goodwyn Institute in the very heart of the city, and in its plan as a combination auditorium, library and office building. The rentals from the five office floors, and from the beautiful auditorium when the latter is not in use for the public lectures, practically support the library and the lecture courses. Both these activities are entirely free to the public.

Goodwyn Institute Library, while possessing a well-rounded general reference collection, is a member of the Special Libraries Association, and may perhaps be said to specialize in technical, agricultural and municipal subjects. It serves as an information bureau not only for Memphis and West Tennessee, but to some extent for the neighboring states of Mississippi and Arkansas.

A part of Miss Freeman's interesting report in the latest Year Book of Goodwyn Institute is quoted elsewhere in this number as giving an excellent idea of the activities of this very live institution.

With the assistance of the Amherst H. Wilder Charity the St. Paul Public Library has taken on, beginning February 1, a new department, notably that of Hospital Service. While the idea of contributing to the comfort of hospital sick by means of books is not a new one and libraries have always shown a willingness to co-operate yet the practice of systematic and organized circulation of books through the hospitals has only very lately been undertaken. This development of library service may be traced directly to the war. It was in the camp hospitals that librarians first felt the emphasis, the great need of this kind of library work and there too they first saw it work out. Mr. C. W. Sumner, librarian of the Sioux City Library, who is the pioneer in this field, may be quoted as saying that he is convinced of the possibility in every city library of a hospital service department. He feels that such a department will soon take its place with such other departments of the library as its branch work, its work for children, its reference work, etc. "What is good for the soldier sick is good for the civilian sick," he added and in November, 1919, began his experiment. This experiment has now proved itself.

As for the plan in St. Paul we expect to include all the hospitals, 11 of them, as well as two girls' homes in the list to be visited by the hospital librarian or her assistant twice a week. At these times the books will be personally distributed as they are wheeled about from ward to ward and from room to room on the small truck. Truck is a bad word as these carriers are much more like tea wagons. Particular attention will be given to special requests and every effort is to be made to co-operate with the superintendents of nurses in procuring special books for the nurses as well as to follow the suggestions of the social workers and psyciatrists who are already in the field. The hospitals have been unanimous in their eagerness to have such service installed, and no less encouraging has been the attitude of the doctors as shown by the resolutions passed by the Minnesota Academy of Medicine and by the Ramsey County Medical Association endorsing the plan of adequate library service for the St. Paul hospitals.

No less interested have been the hospital committee of the M. L. A. of which Miss Carey is chairman. Their assistance has been unfailing.

The library of the Swedish Historical Society of America, consisting of approximately 5,000 books, pamphlets, manuscripts and newspaper files relating to Swedish men and institutions in America, or written by Swedish Americans, will be placed in custody with the Minnesota Historical Society.

Miss Perrie Jones, of Wabasha, Minn., has been secured to undertake this work. Miss Jones is a graduate of Smith College, has had library training both in the summer school conducted by the Minnesota Library Commission and in the New York Publi

Library School, together with five years' experience in library work in Minnesota and New York City.

Miss Caroline B. Sherman, late librarian, and now scientific assistant of the U. S. Bureau of Markets, has a story on "Taking the Mystery out of Marketing" in the Reclamation Record for April 1921. Miss Sherman also has an article in the April Nation's Business.

The monthly report of the Municipal library system of Paris for Nov. 1920, printed in the Bulletin Municipal Officiel for Feb. 7, 1921, announces a reorganization of the reading room service in the central libraries of ten arrondissements. In these libraries, installed in the mairies of the respective arrondissements, three separate collections are administered, viz. a reference, a circulation and a periodical section. These libraries are open every evening for four hours, on Saturdays "à partir de 14 heures jusqu' à 21 ou 22 heures", and on Sunday mornings. This service began functioning on October 16, 1920. In October the use of books jumped to 142,617 as against 124,032 in September and 122,766 in October 1919. In November it rose to 149,812 as against 125,710 in November, 1919.

Mrs. Drusilla L. Lynch, retiring librarian of the Deering Works of the International Harvester Co., is the subject of an appreciation in The Main Wheel, the company's house organ, of February. Mrs. Lynch had been librarian since May, 1910.

A beautifully printed booklet entitled "The Twin High Spots in New England Journalism" has just been issued by the Boston Post—referring to the Daily Post and the Sunday Post. It gives a complete analysis of circulation and the other factors which were responsible for enabling the Post to set a new American record of printing 5,135,966 lines of national advertising in 1920. The producers of the work are deserving of the highest compliments.

"Tell-U-Where", with which Miss Laura Gibbs, member of the Advisory Council S. L. A., is associated, has an instructive write-up in Editor and Publisher for April 9, 1921.

The trend of selling library publicity, as distinct from propaganda publicity, is distinctly on the up-grade. This journal has noted the display pages of the Du Pont Co. and the National Safety Council Libraries. In this issue we reprint a library story written by the President of a big company. In the Coast Banker of March, 1921, there is a snappy illustrated story of the library of the First Wisconsin National Bank of Milwaukee.

Miss Rose M. E. MacDonald, Librarian, U. S. Bureau of Fisheries, has completed "An Analytical Subject Bibliography of the Publications of the Bureau of Fisheries, 1871-1920", 306 pages. The bibliography is printed as Fisheries Document 899, and as Appendix 5 to the Report of the Commissioner of Fisheries for 1920. Miss MacDonald has produced an unusually creditable piece of work, and one which will be of lasting service to many scientists and students.

Miss O. Louise Evans has been appointed librarian of the Office of Public Roads.

Miss E. H. Drylie is librarian of the Works Manager's Department of the Westinghouse Electric and Manufacturing Co. at East Pittsburgh. Miss Drylie also edits the Works Department Bulletin, and has recently compiled a list of books in the Works Department Library.

(Continued from page 88)

WALL PAPER INDUSTRY.

Wall paper review. Mo. (U. S. Federal Trade Commission.)

History of Service:
Inaugurated in June, 1918.

Scope of Service:
Report of wall paper concerns on hanging and special papers for cur. mo. compared with cor. mos. two prev. yrs. Grades, no. of repts, tons on hand first of mo., (tons) rec. during mo., (tons) used and sold during mo., (tons) on hand end of mo., (tons) in transit end of mo.

Hanging paper rept. of paper mills for cur. mo. compared with cor. mos. two prev. yrs. No. of mills, quantity on hand 1st of mo., prod. and shipped during mo., on hand end of mo.

Finished wall paper report of wall paper concerns for cur. mo. compared with cor. mo. two prev. yrs., no. of concerns, on hand 1st of mo., prod. and shipped during mo., on hand end of mo.

Prices: high, low and av. prices paid by wall paper concerns for stocks during cur. mo.

WOOL MACHINERY.

Active and idle wool machinery, with comparative figures for preceding months. Mo. (Bureau of the Census.)

History of Service:
First issued on Nov. 1, 1918, by the Bureau of Markets, Department of Agriculture. In June, 1919, the service was transferred to the Bureau of the Census.

Scope of Service:
Summary of repts. of 922 mnfctrers., looms (carpet and rug separately), sets of cards, combs, spinning spindles (woolen and worsted) in operation. Percentage of idle machinery to total reported, prec. q. No. of machines in operation per shift (single, double), prec. q. Active and idle machine and spindle hrs., prec. q Percentage of idle hrs. to total reported, prec. q.

THE DATA FILE

House organs, "The Case for the House Organ." (The British Printer, Sept.-Oct., 1920, p. 104.)

Journal of Institute of Metals, vol. 24 (1920), contains about 100 pages devoted to abstracts of current literature on non-ferrous metallurgy.

E. F. Houghton & Co., Philadelphia, oils and leathers for the industries, issue several house organs, among them The Houghton Pay Envelope and The Houghton Line. The Houghton organization has 480 employees, 33% of whom are making use of the organization's library. Miss M. Stella Heim is librarian.

Transatlantic Trade for January, 1921, p. 6-8, gives an account of the work of the American Institute in Berlin, its library and its facilities for research workers.

The Colored Department of the Louisville Free Public Library has just issued an 11-page brochure, "Some Books and Pamphlets, Music, Magazines and Newspapers by Negro Writers, Composers and Editors in the Colored Department of the Library."

Quin's Metal Handbook and Statistics, 1921, is out. Published by Metal Information Bureau, Ltd., 7 East India Ave., London.

John Aspegren & Co., 461 Produce Exchange, New York City, have issued charts showing the importation of vegetable oils by seasons, covering the period from 1911 to date.

Annuaire de la l'houille blanche française, ed. by M. Auguste Pawlowski, has just appeared for 1921, its fourth issue.

The Petition in Equity, U. S. v. Southern Pine Association, and others, in the District Court of the U. S., Eastern District of Missouri, is a long title for a 45-page pamphlet, just issued by the Government Printing Office. It is full of information for the special librarian. Not only will this useful member of society get a good working knowledge of the inner operations of powerful trade associations, of the true significance of many trade association "services", but, if carefully read, a more acute ability to judge cost of production and marginal cost statistics.

"Filing," our valued contemporary, is practicing labor recruiting. In its February issue it prints two library stories, one by Miss Rankin, the energetic librarian of New York's Municipal Reference Library, on "Filing Systems of the N. Y. Municipal Reference Library," and another on "Rules for Filing Cards in the Carnegie Library of Pittsburgh." Is this retaliation for our "scoop" in our January issue about the new Canadian Filing Association?

The Library of the U. S. Department of Agriculture, Miss Claribel R. Barnett, librarian, with the co-operation of the Director of Information, has begun the publication of a "Daily Digest," being a summary of news, particularly of an economic character, bearing upon the work of the Department. Daily papers, as well as trade and technical periodicals, are digested. The work of compilation is being done by Mrs. Susan H. Walker, who, for several years, successfully edited the Daily Digest of the Council of National Defense.

The public utility librarian will be interested in "Docket 3535, Special Report of the Connecticut Public Utilities Commission on Street Railway Conditions, January, 1921," 23,140 pp. The appendices of the Report, pp. 1-140, contain a general report on the question of valuation, and reports giving the organization, development and historical cost of the different companies.

A most attractive monograph is "New England—Old and New," 62 pages, illustrated in colors, was issued by the Old Colony Trust Co., Boston, in commemoration of the Pilgrim Tercentenary. A copy has just come to the Editor's desk.

Institutional Holdings of Securities, for 1920, the second annual number is out, 1,664 pages. Published by the Institutional Holdings Co., 441 Pearl St., New York City. Its contents show the securities held for investment by savings and state banks, trust and insurance companies, fraternal and benevolent organizations, estates, etc. It also includes securities held by Canadian insurance companies. The arrangement is under loaning companies.

A new cotton magazine, the first to cover the new cotton empire of the American Southwest, the Pacific Cotton Courier and Vegetable Oil Bulletin, made its initial appearance, Vol. 1, No. 1, in March. It is published by the Courier Publishing Co., Hellman Building, Los Angeles, Cal., at $3.00 per year.

At a meeting on February 18, 1921, of the Chicago Section of the American Chemical Society, an amendment to the constitution was passed officially changing the name of the Bulletin from Chicago Chemical Bulletin to Chemical Bulletin.

Investigations of the Chemical Literature —I. By Frank E. Barrows. The author, who is of the firm of Pennie, Davis, Marvin and Edmonds, counselors-at-law, 35 Nassau street, New York City, writes at length

under the above titles in Chemical and Metallurgical Engineering of March 9, 1921. These articles will be an excellent foundation for library school classroom reference study in chemical technology.

"Safety in the Machine Shop," 188 pp., gotten out by the Travelers' Insurance Co., Hartford, Conn., is an exceptionally well-gotten up pamphlet. It treats in considerable detail of accidents in machine shops.

"Review of Iron and Steel Literature for 1920," 12 pages, is a most useful compilation by E. H. McClelland, technology librarian, Carnegie Library of Pittsburgh. The material is reprinted from "The Blast Furnace and Steel Plant" and "Forging and Heat Treating," of January, 1921.

"Statistical Data Compiled and Published by the Bureau of Crop Estimates, 1863-1920," Government Printing Office, January, 1921, 64 pages, should be on every reference desk. It is Agricultural Department Circular 150, and contains in most compact form the statistics gathered by this Bureau, arranged by subjects.

"The Commercial Museum and Its Work," by Sydney A. Bonnafon, 7 pages, quarto, illustrated, is reprinted from Commercial America, March, 1921. It describes the work the Philadelphia Commercial Museum is doing to promote international trade relations.

By writing to Mr. S. C. McConahey, acting Vice-President of the Westinghouse Air Brake Co., Wilmerding, Pa., a copy of "The Air Brake Family" will be sent you. This brochure describes the various agencies that have been established to promote the general well-being of the employee and to facilitate harmonious industrial relations.

Roure-Bertrand fils, Grasse, France, issue a "Scientific and Industrial Bulletin." It is a valuable contribution to the study of essential oils. Grasse is the center of the French perfume industry. Series 4, No. 2, October, 1920, of the Bulletin has just come to hand. The industrial part of the Bulletins contains ample notes on cost of production of essential oils, on the flower harvests of the south of France, etc. There is also a bibliography of recent publications on perfumes and essential oils.

The Trademarking Manual, 48 pages, is distributed gratuitously by the Kaumagraph Co., 209 W. 38th St., New York City. Useful information concerning registration, cost of designing and the making of trade-marks is contained in the pamphlet.

This manual is timely owing to the recent passage of a new trade-mark law in 1920. Before the passage of this law there were trade-marks in use which could not be registered under the act in force of February 20, 1905.

The Jewelers' Research Bureau, 437 South Broadway, Los Angeles, Cal., has issued a "Complete Manual of Operating Accounts," especially designed for retail jewelers. The issuing bureau is the research bureau of the American National Retail Jewelers' Association. The manual is priced at $5.00.

The Journal of the Washington Academy of Sciences, February 19, 1921, prints an article by R. B. Sosman on the Distribution of Scientific Information in the United States.

The British Journal of Photography of Feb. 4 and 18, 1921, prints respectively installments 1 and 2 of a bibliographic series of articles on "The Earlier Literature of Photography."

Book Talks in April 1921 Bankers Magazine reprints from the bookplate used by the Business Branch of the Newark Public Library "What Ought a Business Man to Read?"

American Acceptance Council, 111 Broadway, New York City, announces "Bankers' Acceptances as an Investment", by Morton H. Fry, as the latest addition to its series of pamphlets on acceptance subjects. A price of 10 cents merely to cover cost of printing and handling is asked of other than Council members.

The National Shawmut Bank of Boston invites you to write for copies of its booklets: Foreign Exchange, The Webb Law, The Edge Law, Acceptances and Scandinavia.

The Refractories Book, a new publication which contains much interesting information about a great business institution, Laclede-Christy, and Laclede-Christy refractories, is really two booklets in one. The first part contains the history of Laclede-Christy, a complete list of their products, information about their clay mines, ceramic laboratory, etc. Part two is devoted entirely to Laclede-Christy fire brick. The publication may be obtained from J. H. McKelvey, sales-manager, Laclede-Christy, St. Louis, Mo.

Hinde and Dauch Paper Co., 408 Water Street, Sandusky, O., have issued a 40-page well-illustrated packing manual "How to Pack It". It contains valuable information for shippers of glass and other breakable ware.

Industrial Publications, Inc., 610 Federal Street, Chicago, announces the publication in the near future of the Ceramic Engineer. It is to be issued monthly at $3.00 per year.

The Cuba Review, 82 Beaver Street, New York City, has ready for delivery a map of the Island of Cuba, showing the location of all the active sugar plantations in Cuba, and giving other data concerning the sugar industry of Cuba. Size 29¾ x 25 in. Price, postpaid, $1.00.

The National Rivers and Harbors Congress, 824 Colorado Building, Washington, D. C., has issued Bulletin No. 1, which con-

tains a discussion of the promotion and development of water transportation service.

The Upholsterer and Interior Decorator for April publishes on page 73 "Some Interesting Books on Interior Decoration."

Watch out for the April 20th number Paper. It is the annual convention number, and will contain in addition to the customary detailed proceedings of the American Paper and Pulp Association a new and very valuable statistical section. An unusually complete report on labor conditions in the mills will be included.

The National Fire Protection Association, 87 Milk Street, Boston, Mass., has issued "Structural Defects Influencing the Spread of Fire", an 18-page pamphlet.

Hercules Powder Co., New York City, is distributing gratuitously to inquirers copies of "Modern Road Building and Maintenance", by Andrew P. Anderson, of the Bureau of Public Roads. The book is prepared for the use of engineers, contractors, road officials and all who are interested in the rational and economic solution of the many problems connected with public highways and the traffic they are required to carry.

The Conveyors Corporation of America, 326 W. Madison Street, Chicago, or 110 W. 40th Street, New York City, will send upon request "Modern Methods of Ash Disposal."

The Paper Mill for April 16, 1921, has a double page map, on p. 102-103, of the "Location of the Pulp and Paper Mills in the U. S." as of 1921.

"Statistical Summary of the Paper and Pulp Industry for the year 1920" is a most comprehensive series of tables occurring on pages 194-200 of the Paper Mill for April 16. Many of the tables are retroactive to 1918, thus linking up with the War Industries Board's bulletin, which covers 1913-1918.

The International Paper Co. has put out an illustrated booklet of 72 pages, entitled "News Print." The origin of paper making, the manufacture of news print, the harvesting and manufacture of wood pulp, the process of pulp and paper making and the organization of the Company make up the principal contents.

A new periodical, large form and illustrated, entitled "Sucrerie, Distillerie, Industries Agricoles," has been launched by the Journal des Fabricants de Sucre, 3, rue de Richelieu, Paris. It is devoted to the history and statistics of the sugar industries, distillation and agriculture, and the first number contains interesting documentary articles relating to France, Poland, Cuba, Java and other countries.

The Board of Trade of Chicago has reissued in a 59-page pamphlet, the statements of J. P. Griffin, peresident of the Chicago Board of Trade and of B. L. Hargis, President of the Kansas City Board of Trade, before the Committee on Agriculture of the U. S. House, of January 14th and 15th, showing the economic necessity and benefits of the present system of trading in futures on the exchanges.

Bulletin No. 8 issued recently by the United States Steel Corporation, through its bureau of safety, sanitation and welfare —is a booklet replete with photographs and descriptive matter of the work being done by the corporation and its subsidiaries for the benefit of employes. 96 pages.

National Bulletin 5-E issued by the National Tube Company, Pittsburgh, on National pipe for refrigerating systems. 46 pp. Contains specifications and tables and is completely illustrated with photographs and drawings. The company has also issued a booklet "National Selling Aids" for the benefit of jobbers of National pipe. It is largely devoted to advertising advice and assistance to jobbers, and discussion of the company's advertising policy. 44 pages, illustrated.

A survey of the oil industry has been published in a booklet by M. S. Wolfe & Co., 41 Broad Street, New York City.

A complete and authoritative glossary of oil field terms is an interesting feature of the booklet "Official Oil Manual" issued by A. L. Jelley & Co., Inc., 170 Broadway, New York City.

The Equitable Trust Co., of 37 Wall Street, New York City, has issued a 66-page digest of the national loans of all nations.

The Guaranty Trust Co. of New York, 140 Broadway, New York City, has issued its bank and public holidays calendar of the world for 1921.

Analysis of the rent and housing problem in New York City, from 1914 forecasted to 1928 has been issued by the American Trust Co., 135 Broadway, New York City.

A Bibliography of Cost Books, 24 pages, has just been issued by the National Association of Cost Accountants, as No. 10, vol. 2, April, 1921, of its Official Publications. The bibliography is one of books only, leaving out entirely pamphlets and magazine material. Considering this fact it is a remarkably full compilation. It is hoped that the Association will meet with sufficient encouragement to warrant a continuation of this effort. The subject of accounting is a very live one and its literature is constantly expanding.

Robert Garrett & Sons, a well known firm of Baltimore bankers, have published a booklet outlining the progress of their organization during the past eighty years.

Lamborn & Co., 7 Wall Street, New York City, have issued a booklet of salient statistics of leading sugar producers and refiners.